

What's News

Business & Finance

Russia's invasion of Ukraine is piling new troubles onto the world's already battered supply chains and bottling up the two countries' vast commodity exports. **A1**

◆ **Global markets** for everything from stocks to oil to wheat are recording some of the most extreme price swings in decades. **B1**

◆ **BP said** it would exit its nearly 20% stake in Rosneft, days after being pressured to unload the holding by U.K. officials amid Russia's attack on Ukraine. **A11**

◆ **Berkshire's net earnings** rose 11% in the fourth quarter. A powerful stock market nearly doubled the conglomerate's investment gains for the full year. **B1**

◆ **Discovery tapped** producer Chris Licht to lead CNN after it takes over the channel, turning to a TV veteran to steady a network roiled by Jeff Zucker's departure. **B1**

◆ **Walmart is focused** on adding new ways to offer shoppers home delivery and efficiently move online inventory as the pandemic-related e-commerce surge shows signs of cooling. **B3**

◆ **Blackstone CEO** Stephen Schwarzman took home a record \$1.1 billion in 2021, underscoring the private-equity giant's growing dominance on Wall Street. **B3**

◆ **After years of enticing** employees with large stock awards and surging share prices, some tech firms are deploying cash inducements. **B1**

World-Wide

◆ **Russian and Ukrainian** officials prepared to meet for the first talks since Moscow began its invasion, as Ukraine's defenders held on to the capital and pushed back Russian troops in urban combat in its second-largest city, Kharkiv. **A1, A8, A10-14**

◆ **Putin put** his country's nuclear-deterrence forces on high alert, a warning to the nations lining up to help Ukraine fend off its Russian attackers. **A1**

◆ **Germany shook up** its defense and energy-security strategies in response to Russia's invasion of Ukraine, marking a pivot in foreign-policy tradition. **A1**

◆ **North Korea launched** a suspected ballistic missile off its east coast, Tokyo and Seoul authorities said, restarting tests after nearly a month of inaction. **A22**

◆ **Senate Republicans** signaled they have no intention of turning the confirmation of Jackson to the Supreme Court into a partisan brawl, looking instead to rally voters for midterm elections. **A4**

◆ **The scope of federal** power to reduce greenhouse-gas emissions comes before the Supreme Court on Monday, as a coalition of Republican-led states seeks to limit measures the EPA can impose on power plants. **A3**

◆ **Fewer people are** getting vaccine booster shots in the U.S. as the Omicron surge fades and more Americans return to normal patterns of life, federal data show. **A3**

JOURNAL REPORT

Technology: What to do about big tech companies. **R1-6**

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Talks Set to Start as War Rages



Russia and Ukraine agreed to meet as fighting continued; a building destroyed by a Russian missile in Vasylykiv, near Kyiv.

Troops, citizens hold line in Kyiv as Western allies step up effort to punish Russia for attack

BY YAROSLAV TROFIMOV

KYIV, Ukraine—Russian and Ukrainian officials prepared to meet for the first talks since Moscow began its invasion on Thursday, as Ukraine's defenders held on to the capital and pushed back Russian troops in urban combat in its second-largest city, Kharkiv.

In a sign of growing tensions with the West over Ukraine, President Vladimir Putin of Russia ordered the country's nuclear-deterrence forces to be put on alert.

Western allies, meanwhile, escalated efforts to counter Russia. European Union member countries will supply Ukraine with jet fighters, the bloc's foreign-policy chief said, and the EU and Canada plan to bar Russian planes from entering their airspace, joining other countries in choking off Russia's access to global aviation routes.

Russia sent a delegation to the southern Belarusian city of Gomel on Sunday, but President Volodymyr Zelensky of Ukraine said he refused to meet in a country that has become a launchpad for Russia's attacks.

Mr. Zelensky did, however, speak by phone to President Alexander Lukashenko of Belarus later in the day and said he agreed to have his envoys meet with the Russian delegation on the river Prypiat along the Ukrainian-Belarusian border. Mr. Lukashenko committed during the conversation, the two men's first in two years, that no Russian military activity would be carried out from Belarus in the meantime, Mr. Zelensky said.

It isn't clear to what extent

Putin Puts Nuclear Forces on Alert

BY ANN M. SIMMONS AND MATTHEW LUXMOORE

With much of the world moving against him, economic sanctions piling up and a military campaign less successful than he expected, President Vladimir Putin of Russia issued on Sunday the ultimate deterrent threat.

Mr. Putin put his country's nuclear-deterrence forces on high alert, a warning to the countries lining up to help Ukraine fend off its Russian attackers. The announcement was a window into Mr. Putin's increasing isolation and anger.

THE UKRAINE CRISIS

- ◆ Russia's modern military stumbles..... **A8**
- ◆ BP to sell its stake in oil giant Rosneft..... **A11**
- ◆ Sanctions spare some banks involved in energy..... **A12**
- ◆ U.S. takes aim at China over Russia ties..... **A13**
- ◆ Invasion upends market playbooks..... **B1**

His behavior is making his inner circle appear visibly uncomfortable.

Mr. Putin issued his warning Sunday sitting at one end of a very long table. Seated far down the table were two top lieutenants who typically exude confidence. After Mr. Putin ordered them to put the

country's nuclear weapons on high alert, Sergei Shoigu, his longtime defense minister and stalwart ally, lowered his head in a sign of consent.

So far, the Russian leader appears to have miscalculated the economic and political costs as well as the on-the-ground challenges of an attack

on Ukraine. His aggression threatens to have far-reaching consequences for both his global standing and the stability of his nation.

Just before the attack, he singled out another close adviser in a televised national security council meeting seen by millions of Russians, taking to task his spy chief, Sergei Naryshkin, for his failure to "speak directly." Mr. Naryshkin appeared uncomfortable and stumbled over his words as the Kremlin leader pressed him to express his views on whether the breakaway east-

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Conflict Threatens New Shortages In Chips, Cars, Oil

BY ALISTAIR MACDONALD AND WILLIAM BOSTON

Russia's invasion of Ukraine is piling new troubles onto the world's already battered supply chains. The fighting has shut down car factories in Germany that rely on made-in-Ukraine components and hit supplies for the steel industry as far as Japan. It has severed airways and land routes that had become crucial since the pandemic began gumming up sea trade.

The conflict is also bottling up Ukraine and Russia's vast commodity exports, sending the price of oil, natural gas, wheat and sunflower oil rocketing. Shipping from Ukrainian ports, an important corridor for grain, metal and Russian oil shipments to the rest of the world, has all but ceased.

Freighters and airlines have warned that the decision by many European nations to close their airspace to Russia, as well as Russia's tit-for-tat retaliation, will increase the cost of flying cargo from Europe to Asia, potentially making some routes commercially

unviable. Western sanctions—especially banning some Russian banks from the Swift global financial payment system—will make it cumbersome for many companies to conduct any type of trade with the country, even in sectors that aren't being sanctioned. There is also the risk of sanctions on individual Russian commodity players, or of Russia retaliating by choking off supply of its products.

Economists and business leaders fear this will hit supply chains that rely on components and little-known commodities from Russia such as neon gas and palladium, important ingredients to make semiconductors. Industries such as car manufacturing have already been disrupted by a surge in demand after the easing of pandemic lockdowns and persistent production bottlenecks.

The threat of rising prices on top of already high inflation adds another challenge for interest-rate-sensitive businesses: having to gauge whether the world's central

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Behind the Widening Sanctions: A Plea and a Mounting Crisis

Following months of groundwork, frenzied late-night phone calls and a potent pressure campaign from Ukrai-

By Laurence Norman, Andrew Restuccia and Tom Fairless

nian leaders, the U.S. and Europe banded together to impose what is shaping up to be the biggest coordinated pack-

age of sanctions ever levied against a major economy.

Over the past three days, that coalition of countries, representing some of the world's biggest democracies, hit Russia with a series of increasingly severe economic penalties over its invasion of Ukraine, from direct sanctions on Russian President Vladimir Putin and restrictions on Russia's central bank to a plan to

block some financial institutions from Swift, an international payments system.

On Sunday, European Union officials set out more restrictions against Russia, including banning Russian airlines from the bloc's airspace and extending sanctions to neighboring Belarus, a key staging point for the Ukraine invasion. U.S. and European officials are

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RESISTANCE: Local residents in Uzhhorod, in western Ukraine, prepared Molotov cocktails Sunday to be sent to the frontline, amid a groundswell of ordinary people taking up arms against Russia.

Germany Pivots on Defense, Aid Civilians Answer the Call To Defend Their Homeland

BERLIN—Three decades after a Soviet-built wall crumbled in this city, Germany shook up its defense and energy-security strategies in re-

By Bojan Pancevski, Drew Hinshaw and Daniel Michaels

sponse to Russia's invasion of Ukraine, a reversal of a foreign-policy tradition that long substituted trade and dialogue for hard power.

Chancellor Olaf Scholz, addressing Germany's Parliament, said Europe's economic

powerhouse would nearly double its military spending, buy U.S.-made fighter planes for the first time in decades and create strategic energy reserves while shifting energy purchases away from Russia.

Going forward, Germany said it would boost annual military spending above the North Atlantic Treaty Organization's target of 2% of gross domestic product, from around 1.5% last year.

The foreign-policy shift by Mr. Scholz, a 63-year-old center-left politician who became chancellor in December, shows

how Russian President Vladimir Putin's attack of Ukraine is sending shock waves throughout the continent.

The day of Russia's attack on Ukraine, Feb. 24, marked a turning point, Mr. Scholz said. "Putin wants to establish a Russian empire," Mr. Scholz said Sunday. The key question now, he said in a rare show of emotion, is "whether we can summon the strength to set boundaries to warmongers like Putin."

Germany, he said, would fight to protect European de-

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By James Marson and Drew Hinshaw

In the battle for Kyiv, Russian troops are facing not only Ukrainian armed forces but also thousands of civilians including a pizzeria owner and a political consultant.

Authorities said they have distributed 25,000 rifles and 10 million rounds of ammunition to volunteers in the capital willing to fight. Websites and social-media channels published instructions on how

to make Molotov cocktails. Groups have been coordinating storage and distribution points for food, clothes and fuel. The battle has even drawn home fighters from abroad.

"I am fulfilling my duty as a Ukrainian citizen, a father and a son," said Kostyantyn Batozsky, a 41-year-old political consultant who said he was branding a weapon for the first time.

Ukrainian officials said dozens of saboteurs who had infil-

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U.S. NEWS

THE OUTLOOK | By David Harrison

Food Prices Weigh on Global Growth



Rising food prices are emerging as a significant headwind to the economic recovery from the pandemic this year, particularly in developing countries where food accounts for an important share of household consumption. Russia's invasion of Ukraine could make those headwinds even stronger.

The price of basic staples such as wheat, corn and soybeans rose steeply last year, which would translate into higher grocery prices worldwide this year, economists said. Consumer food prices tend to lag behind commodity prices by several months. Even if food commodity inflation slows, as many forecasters expect, households will still face higher grocery bills in the months ahead.

John Allan, the chairman of **Tesco PLC**, Britain's largest supermarket chain, told the BBC earlier this month that "the worst is yet to come" for food inflation.

That will both aggravate inflation in many countries, and could slow economic output as consumers cut spending on other goods to accommodate higher outlays for food. Many central banks including the Federal Reserve plan to raise interest rates, or have already done so, because of high inflation to date. Escalating food costs could add pressure to raise them even more, further curbing growth.

Partly because of higher food prices, the World Bank last month raised its forecast for global inflation in 2022 to 3.3% from its estimate last May of 2.3%. Those higher costs are also one reason it projects global economic growth will slow to 4.1% in 2022 from 5.5% in 2021.

"Now you are seeing the domestic consequences: pass-through to consumer prices. People will start to complain," said Gert Peersman, an economist at Ghent University in Belgium.

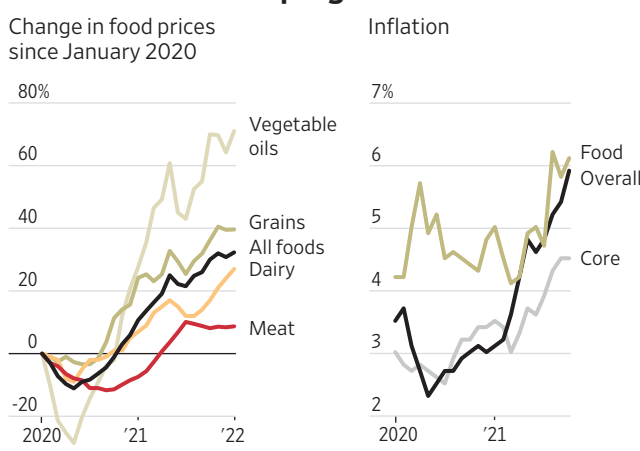
The effect will be felt most sharply in poorer countries, where food accounts for up to half of household budgets, as opposed to less than 15% in developed countries, and inflation is more closely linked to movements in global food prices.

This could widen the gap in economic performance between poorer countries and richer ones. The latter have already recovered faster from the pandemic thanks to better vaccine access and generous fiscal stimulus, according to the World Bank.

That will mean people in developing countries will see their inflation-adjusted incomes decline, which will lower food consumption, said Rob Vos, a top economist at the International Food Policy Research Institute. "And as a result you'll see a slowdown in their economies," he said.

Russia's invasion of Ukraine poses another risk. The two countries combined account for 29% of global

Inflation in Developing Countries



Note: Core inflation excludes food and energy prices. Sources: Food and Agriculture Organization (prices); World Bank (inflation)

wheat exports, according to the U.S. Agriculture Department. Those exports could take a hit if Western sanctions target Russian exports or if the conflict affects the ports that ship most of Ukraine's wheat, said Carlos Mera, head of agricultural commodities research at Rabobank.

Russian missile strikes have hit Ukrainian port cities, including Odessa, and a ship chartered by Cargill Inc., one of the world's largest food suppliers, was hit by a projectile in the Black Sea on Thursday.

Food prices climbed 49% between May 2020 and January of this year and are now at their highest since 2011, according to the Food and Agriculture Organization of the United Nations. Some commodities saw even steeper increases: Sugar

prices are up 66%, and vegetable oils have increased 140%.

An early driver of rising prices was demand from China. After pandemic lockdowns in early 2020, its economy rebounded later that year, boosting imports of grains and animal feed.

In developed countries, government support programs raised families' disposable incomes and pushed up demand for many goods, including food.

Then, last year, drought in Argentina, Brazil and the U.S. hurt production of corn, coffee, sugar and wheat. Supply-chain backlogs helped pushed up prices for some commodities, such as coffee. And higher energy prices boosted fertilizer prices, contributing further to food inflation.

Roughly a third of devel-

oping countries are dealing with double-digit food inflation, according to the World Bank.

In Mexico, for instance, fruit, vegetable and meat prices were up more than 15% in January from the previous year, contributing to the country's overall inflation rate of 7.07%.

Mexico's central bank has raised interest rates six times to combat recent accelerating inflation, damping the country's recovery. The International Monetary Fund expects its growth to weaken to 2.8% this year, from 5.3% in 2021.

Developed countries haven't been spared, though the effect is smaller. Grocery prices in the U.S. rose 7.4% in January from the previous year, according to the Labor Department, the most since 2008. Economists at Goldman Sachs anticipate an additional increase of 5% to 6% this year.

Analysts expect food commodity prices to rise more slowly this year. Mr. Vos expects good harvests, despite the continuing threat of drought in some places. Shipping backlogs should work themselves out, as well. The IMF anticipates global food prices will rise 4.5% in 2022 and decline slightly in 2023.

But those forecasts could be upended by a prolonged conflict in Ukraine.

"It could be a perfect storm moving forward if this escalates," said Mr. Vos.

ECONOMIC CALENDAR

Tuesday: China's factory sector got off to a sluggish start this year as Covid-19 flare-ups disrupted activity and slowed consumer spending. Economists expect the country's official purchasing managers index for the manufacturing sector to worsen in February because of Lunar New Year holiday disruptions and weakened external demand.

The Institute for Supply Management survey of purchasing managers at U.S. factories is expected to show manufacturing activity continued to expand in February as the Omicron wave faded. Businesses appear to be increasing output despite raw material shortages, supply-chain disruptions and trouble attracting workers.

Wednesday: The eurozone's inflation rate rose to a fresh record in January. European Central Bank officials, set to meet on March 10, will be watching closely to see if consumer prices rose yet again in February.

Federal Reserve Chairman **Jerome Powell** appears on Capitol Hill for the first of two days of testimony on monetary policy and the economy. Fed officials are widely expected to raise interest rates at their meeting scheduled for March 15-16.

Friday: U.S. employers are expected to have added jobs at a healthy pace in February as Covid-19 cases fell, fewer workers called in sick and more Americans felt comfortable heading out to crowded places. With a tight labor market, economists will be watching closely to see how much businesses have had to raise pay to attract and retain workers, and how many people are coming off the sidelines and into the workforce.

U.S. WATCH



OFF AND RUNNING: Racers took off at the start of the 8 kilometer at the Publix Gasparilla Distance Classic on Sunday in Tampa, Fla.

VIRGINIA

Couple Killed in Crash With Off-Duty Deputy

A Virginia couple was killed when their car was hit by a vehicle driven by an on-duty sheriff's deputy, authorities said Sunday.

State police said the crash happened about 10:20 a.m. Friday at the intersection of Marsh Road and Granite Street in Fauquier County.

Police said a 2018 Toyota driven by Brian P. Dangerfield of Bealeton was traveling west on Granite Street and had stopped at a stop sign. The Toyota was crossing the northbound lanes of Marsh Road when it was hit by a county-owned Dodge Charger driven by Sheriff's Deputy Brock K. Smith.

The impact caused the Toyota to overturn in the median. Mr. Dangerfield, 65, died at the scene. His wife, Mary D. Dangerfield, 65, died at a local hospital. Both were wearing seat belts. Mr. Smith, the 25-year-old

deputy, wasn't wearing a seat belt. He sustained serious but non-life-threatening injuries.

The sheriff's office didn't immediately respond to email and phone messages Sunday.

—Associated Press

FLORIDA

Boy, 4, Drowns in Canal Near Home

A young boy wandered away from his home and drowned in a canal near his home south of Miami, police said.

The 4-year-old boy's family called police on Saturday afternoon as soon as they realized he was missing, Miami-Dade police said. Patrol officers and police dogs searched the area before divers located the boy's body in the canal, police said.

"It appears in the fraction of a second, the child was able to exit the front door of the residence," Miami-Dade Detective Alvaro Zabaleta said. "It's a very tragic day." —Associated Press

Probe Reveals Unregulated Access to Data Streams

The latest developments in a high-profile criminal probe by special counsel John Durham show the extent to which the world's internet traffic is being monitored by a coterie of network researchers and security experts inside and outside the government.

By **Byron Tau, Dustin Volz and Robert McMillan**

Mr. Durham has been looking into the origins of the FBI's investigation into alleged ties between the Trump campaign and Russia. Recent court filings in his case against cybersecurity lawyer Michael Sussmann, as well as documents obtained by The Wall Street Journal through public records requests, show how U.S. government entities and private cybersecurity companies are able to monitor the flow of web traffic by tapping into vast quantities of data with little oversight or public awareness. Though such technical data doesn't directly reveal identities or message content, it can at times be reverse-engineered to link online activity back to specific individuals or organizations.

A filing by prosecutors earlier this month said people affiliated with Donald Trump's 2016 Democratic rival for the presidency, Hillary Clinton, worked to exploit nonpublic in-

ternet traffic data they had access to in order to establish a narrative tying Mr. Trump to Russia. Mr. Sussmann's lawyers called the allegations misleading and irrelevant.

The monitoring is made possible by little-scrutinized partnerships, both informal and formal, among cybersecurity companies, telecommunications providers and government agencies. The U.S. government is obtaining bulk data about network usage, according to federal contracting documents and people familiar with the matter, and has fought disclosure about such activities. Academic and independent researchers are sometimes tapped to look at data and share any findings with the government without warrants or judicial authorization.

Unlike the disclosures by former intelligence contractor Edward Snowden from nearly a decade ago, which revealed U.S. intelligence programs that relied on covert access to private data streams, the sharing of internet records highlighted by Mr. Durham's probe concerns commercial information that is often being shared with or sold to the government in bulk.

Such data sets can possess enormous intelligence value, according to current and former government officials and cybersecurity experts, especially as the power of computers to derive insights from

massive data sets has grown in recent years. Such network data can help governments and companies detect and counter cyberattacks. But that capability also has privacy implications, despite assurances from researchers that most of the data can't be traced back to individuals or organizations, as the traffic associated with Mr. Trump's Manhattan address was.

At issue are several kinds of internet logs showing the connections between computers, typically collected on networking devices such as switches or routers. They are the rough internet equivalent of logs of phone calls—showing which computers are connecting and when, but not necessarily re-

vealing anything about the content of the transmissions. Modern smartphones and computers generate thousands of such logs a day just by browsing the web or using consumer apps.

Academic researchers looking at such computer logs for evidence of cybersecurity threats in 2016 grew concerned about what appeared to be computer-server connections between Mr. Trump's Manhattan tower and a Russian bank. Mr. Trump has denied any ties to Russia.

Mr. Sussmann—whose firm represented the Clinton campaign as well as a tech firm that provided some data for the research—eventually passed the researchers' find-

ings on to the Central Intelligence Agency and the Federal Bureau of Investigation for further investigation. He is charged with lying to the FBI about whom he represented.

The federal government is obtaining bulk data about network usage.

ing and has pleaded not guilty. The reason for the computer connection remains unexplained. While some independent internet experts have said the traffic appeared odd, oth-

CORRECTIONS & AMPLIFICATIONS

Jackson Hole, Wyo., is about 90 miles west of the town of Dubois. A Journal Report article on Saturday about travel to mountain towns incorrectly said Jackson Hole was east of Dubois.

Some U.S. diplomats who were ordered to leave Kyiv earlier this month went to the city of Lviv near the Polish border, while others went to

the U.S. or other locations. A Ukraine Crisis article on Saturday incorrectly said all diplomats relocated to Lviv.

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U.S. NEWS

EPA's Power Challenged At High Court

Lawsuit by GOP-led states seeks to limit agency rules on power plant emissions

By TIMOTHY PUKO
AND JESS BRAVIN

WASHINGTON—The scope of federal power to reduce greenhouse-gas emissions comes before the Supreme Court on Monday, as a coalition of Republican-led states seeks to limit measures the Environmental Protection Agency can impose on power plants.

No federal regulation directly limits such emissions from power plants. Lawsuits kept both the Obama-era 2015 Clean Power Plan and the Trump administration's less-stringent replacement, the 2019 Affordable Clean Energy Rule, from taking effect. The industry met the 2015 emission targets as more efficient ways to tap renewable sources such as solar power and wind became available.

A lower-court opinion affirming a broader view of the EPA's regulatory power remains on the books, prompting the appeal from West Virginia and allied states seeking to block climate initiatives the Biden administration could propose in the future. The Su-

preme Court's decision to hear the case comes as its conservative majority already has found that the administration exceeded its authority in several policies aimed at combating the Covid-19 pandemic.

The EPA powers are central to President Biden's climate agenda. With fragile majorities in the Senate and House, Democrats have limited ability to advance their platform through new legislation. Like his recent predecessors, Mr. Biden instead is poised to govern through agencies such as the EPA, relying on his inherent constitutional authority and the statutory powers provided by existing legislation.

The court's conservatives, however, have increasingly come to invalidate regulatory actions they believe amount to new national policies that should be determined by legislators.

"This Court has established at least one firm rule: 'We expect Congress to speak clearly' if it wishes to assign to an executive agency decisions 'of vast economic and political significance,'" Justice Neil Gorsuch wrote in January, concurring with a decision to block a Biden administration plan to require large employers to vaccinate or test workers for Covid-19. "We sometimes call this the major questions doctrine."



States including West Virginia have challenged the EPA's powers. Above, a home in front of a coal-fired power plant in Poca, W.Va.

Whether broad strategies to combat global warming run afoul of that test is central to Monday's case. A decision is expected before July.

For half a century, the Clean Air Act has directed the EPA to regulate stationary sources of air pollution that endanger "public health or welfare." The Clean Power Plan, in a move approved last year by the U.S. Court of Appeals for the District of Columbia Circuit, extended that regulatory reach beyond the physical premises of a power plant to allow off-site methods to mitigate pollution.

The decision sparked conflict between conservative

states with big oil, gas and coal industries, and environmentalists who want to address climate change by phasing out those fuels. The rule effectively encouraged utilities to clean up across their fleets, with the ability to comply by replacing old, fossil-fuel-fired generation with cleaner-burning units or zero-emissions wind and solar.

Coal-producing West Virginia was among several of the states that challenged the rule, arguing the EPA's power is limited to regulations "inside the fence line" on the covered plant itself—a restriction that would take off the table measures that could cut emissions more

dramatically and efficiently, and instead potentially make it easier for them to keep coal-burning plants alive.

Mr. Biden has promised to help eliminate emissions that contribute to global warming from U.S. power generation by 2035, but Congress has yet to approve more money and authority to do it.

Industry has changed significantly in recent years amid growing concern over climate change and falling prices for cleaner power. Many corporate titans, including the power industry itself, are backing the EPA in the case, while West Virginia's is limited to a handful of small outfits.

From 2013, power-sector emissions fell more than 21% through 2019 to their lowest point in at least 30 years, according to the most recent EPA data available. More than 30 power companies have pledged to zero out greenhouse-gas emissions from their fleets by 2050, according to the Edison Electric Institute, a trade group for investor-owned utilities.

Exelon Corp. and Consolidated Edison Inc. are leading a group of 10 power companies arguing in front of the justices to uphold the EPA rules. Auto makers, Apple Inc. and Amazon.com Inc. have also filed briefs in support.

Booster Vaccination Rates Drop Off

By JON KAMP

Fewer people are getting vaccine booster shots in the U.S. as the Omicron Covid-19 surge fades and more Americans return to normal patterns of life, federal data show.

The seven-day average for booster shots administered daily was about 149,000 on Feb. 19, down from a little more than a million in early December, when authorities expanded access and Omicron was first detected in the U.S., the Centers for Disease Control and Prevention estimates.

The agency says about half of booster-eligible people have gotten one so far, compared with about 69% of the eligible population who have completed a regular vaccine series.

Public-health officials and researchers say they don't want people to lose a sense of urgency and leave themselves unprepared for another potential ramp-up in cases or possible new variants in the future.

"I don't think any of us are sure we are out of the Covid era," said Meg Fisher, special adviser to New Jersey's health commissioner and a pediatric infectious-disease specialist. She said all types of vaccinations have slumped in the Garden State, which launched a week-long booster push on Wednesday that includes vaccine sites staying open longer.

New Jersey, like New York, also has a mass text-messaging campaign targeting booster-eligible people. Colorado sent more than a million such messages last month. Maryland recently rolled out a new campaign that includes a possible \$1 million prize.

Factors contributing to the booster slowdown likely include vaccinated people putting off additional shots after breakthrough infections, concerns that side effects like fevers and



A teen gets a booster shot at clinic set up a Bellows Falls Fire Department in Vermont.

tiredness could cause them to miss work, and lack of urgency as case numbers plummet, according to Dr. Fisher. "As people become more complacent, they don't really see the need to get boosted," she said.

Data have shown that boosters can enhance protection against Covid-19 that would otherwise fade several months after initial vaccinations. While breakthrough infections were common during the Omicron wave, boosters helped limit infections and the severity of cases including hospitalizations, when compared with vaccinated people who weren't boosted and the unvaccinated, CDC data show. The federal agency has also found that boosted people have the lowest rates of Covid-19 deaths.

About 66% of the fully vaccinated population ages 65 and

up are boosted, according to CDC data, compared with about 47% of the entire fully vaccinated adult population. Geographic patterns mirror those for other vaccine shots, from the highest rates of adoption in some New England states to some of the lowest rates among Southern states.

Authorities started recommending boosters for older and vulnerable people in September, and in November the government recommended them for all adults.

The CDC currently recommends boosters for anyone 12 years and older. People are advised to get boosters at least five months after they get their second dose of an mRNA vaccine from Moderna or Pfizer-BioNTech, or at least two months after the single Johnson & Johnson shot.

In central Florida, 62-year-old Sherry Swendsen got the single-dose Johnson & Johnson vaccine last summer because her retail job required it. She now works from home as a travel consultant and has declined boosters. She said she doesn't have underlying health issues and isn't persuaded by evidence showing boosters can reduce the odds of severe illness.

The sharp rise in breakthrough infections during the Omicron surge likely means there are people who got Covid-19 while waiting on the sidelines before getting boosted, said Buddy Creech, an infectious-disease specialist at Vanderbilt University Medical Center.

—Jennifer Levitz and Jared S. Hopkins contributed to this article.

New Efforts Widen Covid-Test Access

By BRIANNA ABBOTT

As the Biden administration distributes hundreds of millions of Covid-19 tests, some public-health workers are moving to deliver the kits a final mile to some of the people most vulnerable to the virus.

Alejandra Flores-Miller, a community health worker at Johns Hopkins University, is referring people around Baltimore to a phone hotline and chatting with day laborers and others in the community about at-home Covid-19 tests. Some people say that they didn't know tests were available or how to get them, Ms. Flores-Miller said, sometimes due to language barriers.

Others have told her that tests are too expensive or that they don't trust their accuracy, she said. Her team is working on an instructional video on how to use tests properly and interpret the results, handing out some 50 kits and coordinating with community groups and churches to distribute tests and spread the word.

"We still have a lot of work to do," said Ms. Flores-Miller, who has worked with the local Latino community since 2008.

As the Covid-19 wave driven by the Omicron variant has ebbed in the U.S., at-home tests are back on many store shelves. Some 200 million of the tests the Biden administration is mailing out for free have been shipped to homes across the country. Other health officials and organizations including the Rockefeller Foundation are sending tests to more vulnerable communities.

But in some places, including low-income areas, rural parts of the country and some communities of color, a more

local effort from health providers and community organizations is needed to get tests into people's hands, officials and providers said. That work echoes efforts to bring Covid-19 vaccines to people who struggled to reach vaccination sites or were hesitant to get a shot.

"It requires a lot of work for folks like us to make sure those dots are connected," said Ali Khan, an executive medical director at Oak Street Health, a Chicago-based network of primary-care centers that serve seniors on Medicare. Oak Street healthcare providers have sent text messages to encourage patients to order the free tests, answered questions and helped fill out some people's online order forms for the kits.

The Biden administration is reserving 20% of the free tests ordered each day through its website or phone line for ZIP Codes it has identified as more socially vulnerable and working with community organizations to publicize the program. Since Omicron pushed demand for tests to new heights, the administration has also taken steps including instructing insurers to cover eight at-home tests a month for individuals.

The process for getting tests reimbursed by insurers can be cumbersome to navigate for those who do have insurance, public-health experts said. Some also said the four-test limit per address on the tests the administration is sending through the mail is too low for bigger families, multifamily households, front-line workers or people who want or need to test more regularly.

New York City and State Move to Lift Mask Mandates in Schools

By GINGER ADAMS OTIS

New York City Mayor Eric Adams said Sunday that the city's mask mandate for public schools and the vaccine requirement for restaurants, fitness centers and entertainment venues could be lifted March 7, provided that current Covid-19 trends continue.

Earlier Sunday, New York Gov. Kathy Hochul said the statewide school mask requirement will end Wednesday, marking a shift that reflects a decline in Covid-19 cases and decreased risks

from the Omicron variant.

Mr. Adams said the final decision on the city's vaccine requirement and the school mask mandate would come Friday, following a full week of school.

"More than a million New York City school children will return to class tomorrow. If our numbers continue to show a low level of risk, we will remove the indoor mask mandate for public school students," Mr. Adams said on Twitter.

"So long as our indicators show a low level of risk and we see no surprises this week,

on Monday, March 7 we will also remove the vaccination requirements for Key2NYC—meaning indoor dining, fitness and entertainment venues," he tweeted.

While the state will no longer mandate face masks at school, counties and cities that want to keep the requirement in place have authority to do so, Ms. Hochul said. The governor let a general mask mandate for indoor businesses expire in early February.

The Centers for Disease Control and Prevention on Friday eased federal Covid-19

masking guidelines, including at schools, following a steep drop in Covid cases, decreased risks from the Omicron variant, and mitigation efforts nationwide.

The CDC now recommends universal school masking only in communities where Covid-19 levels are high.

The updated rules in New York state include children 2 years and older in child-care facilities, Ms. Hochul said.

Masks will still be required on public transportation, healthcare facilities and certain other settings, she said.



Counties and cities in New York state that want to keep school-mask rules in place will have the authority to do so.

U.S. NEWS

Ukraine Raises State of the Union Stakes

By KEN THOMAS

WASHINGTON—President Biden often points to big moments as inflection points facing the nation and the world. Now, in the midst of a foreign-policy crisis, he is confronting one of his own.

Mr. Biden, who has seen his standing with voters tumble during his first year in office, will attempt to balance competing priorities in Tuesday's State of the Union address by framing the U.S. response to the war in Ukraine along with his administration's efforts to emerge from a deadly pandemic and confirm Judge Ketanji Brown Jackson to serve on the Supreme Court.

White House aides had initially envisioned the annual address to Congress as a way to outline steps to fight inflation and alleviate supply-chain snags, restore some sense of normalcy after three years of fighting Covid-19 and promote accomplishments such as the \$1 trillion infrastructure law.

Now the speech will take place against the backdrop of the largest ground war in Europe since World War II, as the president has sought to rally U.S. allies against the Russian invasion of Ukraine through a series of sanctions against President Vladimir Putin and the Russian economy.



President Biden spoke last week on Russia's invasion of Ukraine, which will be a focus of his State of the Union address.

"The American people and anybody watching around the world will hear the president talk about the efforts he has led over the past several months to build a global coalition to fight—fight against the autocracy and the efforts of President Putin to invade a foreign country," White House press secretary Jen Psaki said Sunday on ABC.

Mr. Biden has assailed Russian aggression but drawn a red line against sending U.S. forces into Ukraine. The admin-

istration has said it is considering again tapping the U.S. Strategic Petroleum Reserve if oil and gas prices surge.

State of the Union addresses are among the most belabored speeches a president can deliver.

Mr. Biden's address, beyond his prescriptions for Covid-19 and Ukraine, also is expected to provide a road map for how Democrats should attempt to resuscitate parts of the president's Build Back Better agenda, which has faltered.

Former White House chief of staff Leon Panetta, who served under former President Bill Clinton, said in such circumstances Mr. Biden would be well-advised to scrap the traditional formula and try to "speak very straight to the American people."

"From a political point of view this is an opportunity to try to reach out and really recapture America, especially Americans who are worried about where we are as a nation," said Mr. Panetta, who

also served as defense secretary under former President Barack Obama.

For Mr. Biden, who campaigned on his experience on the world stage and appeal to middle-class voters after years overseeing judicial nominations in the Senate, the confluence of events should help him use the speech to point to a consequential period for the nation.

"The world is at an inflection point. Things are going to change in big ways," Mr. Biden

said earlier this month. "This is one of those transition moments."

Mr. Biden will also seek to build support for his nomination of Judge Jackson. The White House is seeking a speedy confirmation process, hoping to win Senate confirmation by Easter, which falls this year on April 17.

The speech will offer Mr. Biden a large viewing audience to make an early case for Democrats as they try to maintain control of Congress in next fall's midterm elections. But history shows that first-term presidents often lose seats in Congress after two years.

Mr. Biden's job-approval ratings stood at 40.8% on Saturday, according to FiveThirtyEight's aggregation of public polls, down from 53% when he arrived in office in January 2021.

As Ukraine remains under attack, it stands to occupy a significant amount of the president's time even as many Americans are wary of becoming too involved in the crisis. A poll released last week by the Associated Press-NORC Center for Public Affairs Research found that 26% of Americans said the U.S. should have a major role in the conflict, while 52% said a minor role and 20% said none at all.

Nominee Worked for Defense, a Rarity

By LAURA KUSISTO AND JACOB GERSHMAN

Supreme Court nominee Ketanji Brown Jackson would, if confirmed, be the first justice in decades to have worked as a lawyer representing poor criminal defendants, a background that could add a new perspective to the high court's deliberations.

President Biden announced his selection of Judge Jackson on Friday to fill the seat to be vacated by Justice Stephen Breyer, who is retiring at the end of the current term. Judge Jackson, the first Black woman nominated to the Supreme Court, has spent nine years as a federal judge in Washington, serving as a U.S. district judge and more recently on an influential appeals court.

From 2005 to 2007, the Harvard Law graduate worked in the Washington, D.C., federal public defender's office handling appeals for defendants who had been convicted of a range of crimes, from drug and weapons offenses and fraud to tax evasion. She also represented individuals who were detained as enemy combatants at the U.S. Naval Station in Guantanamo Bay, Cuba.

She separately served two stints on a government commission that sets sentencing guidelines for the federal courts, where she pushed to remedy what she saw as racial imbalances in the sentencing regime for drug crimes.

"This kind of professional diversity is something we really have not seen on the court in the past," said Melissa Murray, a law professor at New York University.

The last member of the Supreme Court with criminal defense experience was Thurgood Marshall, the nation's first Black justice, who retired in 1991.



Ketanji Brown Jackson, nominated for the Supreme Court, has represented poor criminal defendants.

In confirmation proceedings last year for her appeals-court seat, Judge Jackson said working as a public defender gave her a practical understanding of the criminal justice system and provided an opportunity "to help people in need, and to promote core constitutional values," including that "every person who is accused of criminal conduct by the government, regardless of wealth and despite the nature of the accusations, is entitled to the assistance of counsel."

The judge also said her experience prompted her to interact with defendants in a more personal way when she sentenced them for their crimes, in an effort to make sure they understood their offenses and their punishment.

Judge Jackson brings a personal perspective to the criminal justice system as well. She has a brother and two of her uncles who have worked as police officers, including one who served as police chief in

her hometown of Miami, while another of her uncles received a life sentence for a drug crime.

Justice Breyer, for whom Judge Jackson clerked, was a reliably pro-defendant vote on the most high-profile criminal justice issues, such as capital punishment, but Judge Jackson may be more consistently so, including on issues such as limits on police searches and how much deference to grant to prosecutors and judges, court watchers said.

When Justice Breyer "thought there was a really good public policy benefit for giving a little more power to the police, a little more power to prosecutors, he wasn't averse to that," said Douglas Berman, a law professor at the Ohio State University.

Historically, criminal-defense experience has been considered something of a liability for high-profile judicial nominees, for fear they could be labeled as soft on crime for

having represented unsympathetic clients.

During confirmation hearings last year for Judge Jackson's nomination to the U.S. Court of Appeals for the District of Columbia Circuit, she attracted scrutiny from Republicans particularly for her work on Guantanamo matters.

After Judge Jackson's Supreme Court nomination Friday, the Republican National Committee released a statement highlighting that she has "a record that includes defending terrorists."

Responding to questions in her last confirmation proceedings, the judge said she was "keenly aware of the threat that the 9-11 attacks had posed to foundational constitutional principles, in addition to the clear danger to the people of the United States." But she also said lawyers have a duty to represent their clients zealously, and to not voice personal disagreement with their alleged behavior.

Barr Urges the GOP To Move Past Trump

By SADIE GURMAN

Former Attorney General William Barr writes in a new book that former President Donald Trump has "shown he has neither the temperament nor persuasive powers to provide the kind of positive leadership that is needed," and that it is time for Republicans to focus on rising new leaders in the party.

The release of the former attorney general's 600-page book, "One Damn Thing After Another," is coming as Mr. Trump, who remains the GOP's dominant figure, contemplates another presidential run. Mr. Barr writes that he was convinced that Mr. Trump could have won re-election in 2020 if he had "just exercised a modicum of self-restraint, moderating even a little of his pettiness."

"The election was not 'stolen,'" Mr. Barr writes. "Trump lost it." Mr. Barr urges conservatives to look to "an impressive array of younger candidates" who share Mr. Trump's agenda but not his "erratic personal behavior." He didn't mention any of those candidates by name.

A spokesman for Mr. Trump didn't respond to a request for comment on Mr. Barr's book. Last summer the former president called his former attorney general "a disappointment in every sense of the word."

On Sunday afternoon, Conservative Political Action Conference organizers released results of a straw poll of attendees that showed Mr. Trump was the preferred 2024 GOP nominee among 59% of 2,574 voters. Florida Gov. Ron DeSantis finished second at 28% and former Secretary of State Mike Pompeo was a distant third at 2%.

Mr. Trump spoke at the conference Saturday night and strongly suggested he would run for president again.

Mr. Barr's memoir adds to a growing list of books by senior Trump administration officials and journalists about the former president. It is scheduled for release March 8 by the William Morrow imprint of HarperCollins. Both HarperCollins and The Wall Street Journal are owned by News Corp.

The recollections and conclusions by Mr. Barr are notable because he was one of Mr. Trump's most powerful cabinet secretaries and was once such a close ally that Democrats accused him of acting more like

the president's defense attorney than an apolitical law-enforcement official. Mr. Barr, a respected figure in Washington conservative circles, returned to head the Justice Department in February 2019 after Mr. Trump ousted his first attorney general, former Sen. Jeff Sessions, an Alabama Republican.

During much of Mr. Barr's time in the Trump administration, some said he protected the president at the expense of the Justice Department's independence, especially over his handling of special counsel Robert Mueller's investigation of Russian interference in the 2016 election.

Mr. Barr issued his own summary of Mr. Mueller's investigative report, depicting the results in a way that Mr. Mueller and others described as misleading or overly favorable to Mr. Trump. He also worked in the ensuing months to undermine some of the prosecutions spawned by the Mueller investigation. An example was his decision to drop the criminal case against Michael Flynn, Mr. Trump's former national security adviser.

"The election was not 'stolen,' Mr. Barr writes. "Trump lost it."

Mr. Barr has said that he intervened to correct what he saw as overreach by the prosecutors and flaws in the department's approach to those cases, a stance he maintains in his book. "Predictably our motion to dismiss the charges led to an election-year media onslaught, flogging the old theme that I was doing this as a favor to Trump," Mr. Barr writes. "But I concluded the handling of the Flynn matter by the FBI had been an abuse of power that no responsible AG could let stand."

He provides the details of a contentious meeting on Dec. 1 in the Oval Office hours after Mr. Barr said publicly that there wasn't evidence of widespread voter fraud in the presidential election that could reverse Joe Biden's victory, contradicting Mr. Trump's claims.

"This is killing me—killing me. This is pulling the rug right out from under me," Mr. Trump shouted at Mr. Barr, according to the book. "He stopped for a moment and then said, 'You must hate Trump. You would only do this if you hate Trump.'"

Mr. Barr writes that he reminded Mr. Trump that he had "sacrificed a lot personally to come in to help you when I thought you were being wronged," but that the Justice Department had not been able to verify any of his legal team's assertions about mass voter fraud.

—John McCormick contributed to this article.

Republicans Signal No Partisan Brawl

By NATALIE ANDREWS

WASHINGTON—Senate Republicans signaled they have no intention of turning the confirmation of Judge Ketanji Brown Jackson to the Supreme Court into an ugly partisan fight, focusing their energies instead on using President Biden's pick to rally conservative voters heading into the midterm elections.

While confirmations in recent years have become bitter battles over the future of the court, lawmakers of both parties see the stakes differently this time, largely because Judge Jackson would replace Justice Stephen Breyer, a liberal-leaning jurist, in a court that is balanced 6-3 toward conservatives.

Most Republicans also believe that blocking Mr. Biden's pick would be difficult, even in a 50-50 Senate. While Democratic Sens. Joe Manchin of

West Virginia and Kyrsten Sinema of Arizona have sometimes opposed Mr. Biden's policy priorities, they have backed the president's judicial nominations. New Mexico Sen. Ben Ray Lujan, who was sidelined with a stroke, is recovering and expected to return to the Senate soon.

"The bottom line is the way the math works out, if all the Democrats vote for her, it's game over," said Carrie Severino, president of the Judicial Crisis Network.

The conservative group spent millions of dollars to promote President Trump's three high-court nominees, a priority of Senate GOP leader Mitch McConnell (R., Ky.). She declined to provide details on how the group would address Judge Jackson's nomination.

Republican strategists and aides also worry that if Republicans aggressively attack Judge Jackson, it could back-

fire politically. Back in 2018, Democrats lost four incumbent Senate seats, despite winning the House majority, which some saw in part as a backlash over their heated opposition to the confirmation of Justice Brett Kavanaugh.

"I don't think Senate Republicans are going to do the scorched-earth approach," said Mike Davis, founder of the Article III Project, which advocates for conservative judges. "It's bad politics and it's wrong to do it."

With the court poised to decide cases on controversial issues including abortion rights and affirmative action, Democratic and Republican groups are already using the pick to try to raise money and enthusiasm ahead of November contests set to decide control of the House and Senate, currently held by Democrats.

Judge Jackson's confirmation will "help counter the

THREE far-right judges that Trump and McConnell rushed through confirmation," said the Democratic Congressional Campaign Committee in an email to supporters. The Republican National Committee called her a "radical, left-wing activist."

Mr. Biden and Democrats are hoping the nomination of the first Black woman to serve on the Supreme Court will boost the party's sagging poll numbers, particularly in states like Georgia where Democratic Sen. Raphael Warnock is running for re-election.

Mr. Biden said he hoped to win Republican support for the pick.

Only three Republicans—Sens. Lisa Murkowski of Alaska, Susan Collins of Maine and Lindsey Graham of South Carolina—voted to confirm Judge Jackson to the federal appeals court for the D.C. circuit last year.



William Barr



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U.S. NEWS

Democrats Clash in Border Area

In a Texas primary, candidates are far apart on immigration and other key issues

By TARINI PARTI

LAREDO, Texas—A Democratic primary fight in a southern-border congressional district is highlighting the party's broader turmoil over immigration policy and whether it can hang on to the support of moderate and Hispanic voters.

Nine-term Rep. Henry Cuellar, in a rematch of a close 2020 race, faces progressive lawyer Jessica Cisneros, who lost by fewer than 3,000 votes in their prior race in Texas' 28th Congressional District. Ms. Cisneros got a boost in fundraising and a fresh look from some voters after the Federal Bureau of Investigation in January raided Mr. Cuellar's home and campaign office. The FBI has disclosed few details about the investigation; the congressman says he is cooperating with the probe.

Mr. Cuellar, 66 years old, is one of the most conservative Democrats in Congress and one of the party's top critics of President Biden's handling of the border, pushing the administration to increase border security and deterrence strategies such as deportations. He has sought to make Tuesday's primary in part a referendum on immigration policy and law enforcement.

Ms. Cisneros, 28, a former immigration lawyer, is aligned with the party's progressives who say policies aimed at deterring migrants from crossing the border don't work and want to emphasize overhauling the asylum system and creating more legal pathways for migrants. In ads, Mr. Cuellar says Ms. Cisneros wants to make deep cuts to the U.S. Border Patrol, a reference to a 2019 candidate questionnaire she submitted.

A third Democratic candidate, former community organizer Tannya Benavides, could ensure neither Mr. Cuellar nor



Jessica Cisneros, a progressive, is one of the candidates challenging Rep. Henry Cuellar, one of Congress's most conservative Democrats.

Ms. Cisneros earns a majority of the vote in a tight race, forcing a runoff in May.

Administration in middle

The Biden administration has found itself caught between the Democratic Party's centrist and progressive wings on immigration policy as it tries to manage a surge in migrants at the southern border. The issue is especially heated in Mr. Cuellar's district, where Democrats lost some voters to the Republican Party in the 2020 election. Mr. Biden won the district by about 4 percentage points, compared with Hillary Clinton's nearly 20-point margin over Donald Trump in 2016. Mr. Cuellar, however, beat his GOP opponent in 2020 by about 19 percentage points.

Mike Uribe, 55, who works as a meat cutter at a grocery store in Laredo, has supported Mr. Cuellar in the past, but he said he was reconsidering because of the FBI raid. He said he wants the border to be more of a priority for elected officials, however, and he is concerned that Ms. Cisneros's views on the border are too liberal. "The border is out of control," he said. "Something has to be done."

A December Wall Street Journal poll found that immi-

gration was the top policy priority for 13% of voters across the U.S.—the biggest share for any issue—followed by the economy, inflation and other topics.

Mostly Hispanic district

The South Texas district represented by Mr. Cuellar is slightly more Democratic this year after redistricting. About 80% of its population identifies as Hispanic and a significant part as Catholic. Among those who live in the district are oil-industry workers and a growing number of federal law-enforcement officials. U.S. Customs and Border Protection agents, including some on horseback, walked in a parade in Laredo recently to cheer from the crowd. The Laredo area has at least three Immigration and Customs Enforcement detention centers.

Roughly half of Hispanics who voted in the 2020 presidential election said they supported spending more on the border, limiting asylum and reducing immigration, and 42% said they backed more deportations, according to recent data released by Equis, a Latino firm that specializes in analyzing the Latino electorate. The December WSJ poll



Rep. Henry Cuellar, one of Congress's most conservative Democrats.

also found that Hispanic voters are showing signs of dividing support between Democrats and Republicans more evenly than in recent elections.

Since the FBI raid, Mr. Cuellar hasn't been holding public events. He skipped Laredo's "Washington's Birthday Celebration" parade, one of the biggest community events of the year. Instead, he has been highlighting the funding he has brought home from Washington and the ways he says Ms. Cisneros is out of step with the district's voters.

At odds on many issues

Besides border policy, the two candidates have differing views on abortion, climate, guns and healthcare. Mr. Cuellar was the only Democrat in the House last year to vote against legislation that would codify abortion rights into federal law and has had an "A" rating by the National Rifle Association. Ms. Cisneros backs a progressive agenda that includes support for a single-payer healthcare system known as Medicare for All and the Green New Deal, a proposed economic overhaul to address climate change.

"She wants to get rid of Border Patrol—in fact, she wants

to turn them into environmental specialists to look at the water in the Rio Grande," Mr. Cuellar said in an interview, echoing the attack ads he recently began to air against Ms. Cisneros. "Open borders is what people don't want to see. So those are the issues that people have been bringing up."

Ms. Cisneros, who recently campaigned with progressives such as Rep. Alexandria Ocasio-Cortez (D., N.Y.), said in an interview that Mr. Cuellar was misconstruing her positions, saying her goal is to diversify the jobs in her district beyond law enforcement. "We need multiple pathways to a middle class here and for that we have to have different kinds of jobs," she said, mentioning jobs related to infrastructure and expanding broadband as examples.

Some Republicans say if Ms. Cisneros wins the primary, it could bolster their chances of winning in November, given the increased support former President Trump received in 2020. Progressives, however, have said that voters in South Texas are unconventional, pointing to Vermont Sen. Bernie Sanders's win in Mr. Cuellar's district in the last Democratic presidential primary.

Trial of Jan. 6 Riot Defendant To Start

By ARUNA VISWANATHA

WASHINGTON—The first of the pro-Trump supporters who stormed the U.S. Capitol on Jan. 6, 2021, and who is fighting his charges will go on trial Monday, after more than 200 people have pleaded guilty to committing various offenses that day.

The trial is being viewed as a critical test for the government, which has charged more than 750 people in connection to the riot that injured more than 100 police officers and caused more than \$1 million in damage in a failed effort to stop the certification of President Biden's 2020 victory over then-President Donald Trump.

"If the government wins, and they are able to prove the validity of all of the charges, that could likely send a lot of defendants racing for plea deals," said Javed Ali, a former senior FBI counterterrorism official who now teaches at the University of Michigan, adding that if prosecutors lose on some counts, other defense attorneys are likely to push for trials.

About a dozen other alleged rioters are scheduled to go to trial in the coming months, potentially including members of the Oath Keepers militia group who face the most serious charges leveled in the investigation of seditious conspiracy.

Recent filings in other cases suggest the defendants are leery of facing a jury from the District of Columbia, where all of the trials are expected to take place.

In a poll commissioned by the federal public defender's office in Washington, which is representing many of the Jan. 6 defendants, 71% of the district's residents said they believed people arrested for activities related to Jan. 6 were guilty and 82% believed the term "insurrection" was an apt description for their actions.

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THE UKRAINE CRISIS

Russia's Modernized Military Stumbles

Initial setbacks spur expectation that Putin's forces will step up their firepower

The Russian military has faltered early in its invasion of Ukraine, as stiff resistance threatens to turn Moscow's hopes for a swift victory into a protracted and costly war, U.S. officials and allied military experts say.

By Michael R. Gordon,
Max Colchester and
Daniel Michaels

The Kremlin's invasion represents the most formidable challenge for the Russian military since it was modernized under Gen. Valery Gerasimov, Russia's top military officer who was appointed to his post in 2012. Yet no Ukrainian cities have been taken by the Russian military. Some of the Ukrainian Air Force and air defenses are still intact.

Western officials and analysts say Russia's strategy had been based on the premise that an initial barrage of missile strikes and a thrust toward Ukraine's capital would bring about the quick collapse of President Volodymyr Zelensky's government. Mr. Zelensky, however, remains defiant while facing long odds.

Russia holds many military advantages over Ukraine. One third of Russia's combat power near Ukraine is still outside the country, the Pentagon says, and has yet to enter the fray. The next few days could prove pivotal, as Russian President Vladimir Putin ponders whether to take a more aggressive approach to bludgeon Mr. Zelensky's government into submission, potentially causing more civilian casualties.

Russia has an array of artillery, rockets and air power. Employing these weapons, however, would only further antagonize the population that Moscow is hoping to draw into its sphere of influence and make it harder for the Kremlin to control the country of 44 million.

Since the start of the conflict,



A Ukrainian fighter examining a destroyed Russian military vehicle in Kharkiv on Sunday. No Ukrainian cities have been taken by the Russian military.

Russia has fired more than 320 missiles. Its ground forces have advanced from Belarus to within 30 kilometers of Kyiv's center. Russian forces moved swiftly from bases in Crimea and carried out a rare amphibious landing from the Sea of Azov.

Now, the Pentagon says there are signs Russia is resorting to more firepower, including rockets, in its attempt to take Chernihiv, a city 150 kilometers northeast of Kyiv.

Mick Ryan, a retired Australian Army major general who has studied advanced warfare, says Russia's failure so far to achieve decisive gains and its potential depletion of precision-munition supplies "probably will force them to use older weap-

ons that are less precise and more deadly."

"In the next 72 hours I expect greater lethality on the battlefield," he added.

Western analysts say there are few parallels between Russia's approach in Ukraine and how it would face off against a NATO force, where mass firepower would be used from the outset and the potential use of nuclear weapons could also be threatened.

The Russian military has improved considerably since its wars to subdue insurgents in Chechnya, which lasted until 2000, and intervention eight years later in Georgia, which secured two breakaway regions.

Russia's operations since

then had been limited and sometimes were carried out in areas where there was a reservoir of support. In 2014, the Russians quietly infiltrated Crimea with special forces, naval infantry and intelligence operatives and secured the peninsula with nary a shot. That same year, Russia intervened in the Donbas region in southeast Ukraine and marshaled a proxy force of separatists.

Russia's 2015 intervention in Syria to buttress Syrian President Bashar al-Assad showcased its air power and long-range missile capability. In contrast to the invasion of Ukraine, however, the Syria operation didn't include the deployment of a large number of Russian ground

forces or combat against an organized army.

James Hackett, senior fellow for defense and military analysis at the International Institute for Strategic Studies in London, noted Russia still retains advantages in personnel and equipment, though movement could now be more difficult than before since bridges have been destroyed and the Ukrainians have had time to better prepare defenses. The course of the conflict, analysts say, will turn on whether Ukraine can hold Kyiv and what kind of guerrilla battle the Ukrainians can maintain.

Jack Watling, an expert on land warfare at the Royal United Services Institute, a British defense think tank, says his analy-

sis before Russia's invasion had been that Ukraine's conventional forces would hold out for 10 days before shifting to more unconventional resistance warfare.

Previous conflicts, Mr. Watling said, have shown that "the Russians always take more military losses than they should." But a question is how much public support Mr. Putin will have at home, as the war drags on and Russian soldiers die.

Moscow's hope, he said, had been to avoid this prospect by planning a "shock and awe" demonstration that involved rapid advances and the seizure of a few key objectives in the hope the Zelensky government would quickly surrender or flee.

"That failed," he said.

Belarus Set to Open Door To Moscow's Nuclear Arms

By Evan Gershkovich

MINSK, Belarus—Voters casting ballots in Sunday's referendum were poised to abandon the country's non-nuclear status, an outcome that could lead to Moscow deploying such weapons in Belarus just as Russian President Vladimir Putin raised the alert level for his country's nuclear forces.

Alexander Lukashenko, Belarus's longtime leader, is expected to tighten his grip on power in the far-reaching constitutional referendum that was all but certain to pass in the tightly controlled political system. The vote, beyond upending Belarus's position on nuclear weapons, could allow Mr. Lukashenko to extend his

term as president.

As he cast his vote, Mr. Lukashenko said he would ask Mr. Putin for nuclear weapons if the West threatened Belarus.

Michael Kofman, an expert on the Russian military at CNA, a not-for-profit research organization, said it would represent a further signal Belarus is becoming more firmly ensconced in Russia's security orbit. A deployment of Russian nuclear forces to Belarus wouldn't meaningfully affect the West's security calculus, he added.

The invasion of Ukraine that kicked off last week has horrified many Belarusians, who see Ukrainians as a brother nation. On Sunday, hundreds of Belarusians took to the streets chanting "No to war" and "Russia

out." They gathered outside constitutional-referendum polling stations, marched through the capital Minsk's streets carrying Ukraine's yellow-and-blue flags, and laid flowers at the Ukrainian Embassy.

Russia has been using Belarus as a de facto staging base for its attack on Ukraine. Moscow massed some 30,000 troops in the country in the days before the invasion, along with tanks, jet fighters, attack helicopters, and missile systems. On Thursday, Russian troops poured across Belarus's border into Ukraine, just 70 miles from the capital Kyiv. Russian forces have since used the country to lob missiles at Ukraine, and to launch aircraft and airborne insertions, military analysts say.



A woman in Vitebsk, Belarus, on Sunday filled out a ballot in a far-reaching constitutional referendum that was all but certain to pass in the country's tightly controlled political system.

Putin Calls For Nuclear Readiness

Continued from Page One

ern Ukraine regions of Donetsk and Luhansk should be recognized as independent.

For more than a decade, Mr. Putin has pushed the boundaries of international behavior, often coming away with what he wanted with penalties that were manageable. He invaded the former Soviet republic of Georgia in 2008 to support two breakaway republics, seized Ukraine's Crimean Peninsula in 2014 and threw Russia's military might behind Syrian leader Bashar al-Assad. But he built toward his biggest gamble ever during the isolation of Covid-19. Mr. Putin retreated to his residence outside Moscow and imposed stringent quarantine requirements on anyone wanting to see him.

It was during that period that he began making his current case for attacking

Ukraine. In a 7,000-word essay written last summer and published on the Kremlin's website, Mr. Putin outlined what he said was evidence that Ukraine is an artificially created country infiltrated by foreign forces and overrun by nationalists who threaten Russia's security.

Mr. Putin's essay soon became so core to the Kremlin's narrative on Ukraine that the Defense Ministry added it to the curriculum studied by all Russian service members, including the 190,000 troops estimated to have massed near Ukraine's borders ahead of Thursday's invasion.

Mr. Putin's rhetoric grew increasingly hostile, in particular to the West and to Ukraine's leader, Volodymyr Zelensky.

Russian and Ukrainian negotiators met in Paris in January to discuss ways to implement an earlier deal between the two countries called the Minsk-2 agreement. The deal, which remained dormant amid disagreements over how to implement it, gave Russia significant say in Ukraine's future and Mr. Putin a potentially face-saving way to de-escalate—until he chose to invade

and rendered the agreement unviable.

"The current president recently said that no part of the Minsk agreements is to his liking," Mr. Putin said, referring to Mr. Zelensky. Then Mr. Putin used a common Russian quip: "Like it or not, you've got to suffer through this, my beauty."

"Ukraine is truly a beauty," Mr. Zelensky later responded, "but when he says 'my beauty,' that seems a bit much."

After talks with President Emmanuel Macron of France

After the demise of the Soviet Union, Ukraine gave up its nuclear weapons.

around the same time, the blame again shifted to NATO.

"We are not moving toward NATO, but NATO is moving toward us," Mr. Putin charged at a briefing following talks with Mr. Macron on Feb. 8. "Therefore, to say that Russia is behaving aggressively, at least, does not correspond to sound logic."

Mr. Putin's treatise on Ukraine ultimately became the basis of two angry, threatening speeches given last week, one announcing Russia's recognition of the breakaway regions of eastern Ukraine as independent states and another, on Thursday, launching a "special military operation" to rid Ukraine of NATO-supplied weapons and what Mr. Putin falsely claims are the Nazis who run the country.

"Now a few very important words for those who may be tempted to interfere in events," Mr. Putin said in Thursday's address. "Whoever attempts to interfere with us, let alone create threats to our country, to our people, should know that Russia's answer will be immediate and will lead to consequences of the kind you've never faced before in your history."

Mr. Putin's nuclear threat came as much of the world declared him an international pariah. He is among a small number of leaders to be hit by personal sanctions. That club includes Mr. al-Assad of Syria, North Korea's Kim Jong Un and Venezuela's Nicolás Maduro.

Now evidence is mounting

that even some allies might be moving away from him. Turkey is weighing a request from Ukraine to block Russian warships from entering the Black Sea through a strategic chokepoint. Ibrahim Kalin, a spokesman and top aide to President Recep Tayyip Erdogan, tweeted Sunday that his country would "continue our efforts to help the people of Ukraine and end bloodshed in this unjust and unlawful war." Azerbaijan, a former Soviet republic and ally of Russia, has sent humanitarian aid to Ukraine.

Mr. Putin will face added pressure from ordinary Russians who are already being hit by sanctions. Long lines at ATMs over the weekend prompted the central bank to say the Russian financial system was stable. The ruble and stocks are expected to decline in Moscow on Monday as sanctions hit those markets. Prominent Russians including some oligarchs have criticized the invasion.

A senior U.S. defense official said Mr. Putin's move on nuclear weapons was unnecessary because Russia has never been under threat by NATO and it is dangerous because of the possibility of a miscalculation.

Mr. Putin first touted Russia's nuclear power before the invasion when he reminded his nation that it is one of the most powerful nuclear nations in the world, and warned that an attack on Russia would lead to defeat of any potential aggressor.

The potential use of nuclear weapons—by Ukraine, not Russia—was a well-trodden justification for Russia's attack.

But Ukraine has no nuclear weapons. In 1994, three years after the demise of the Soviet Union, the newly independent state agreed to give up its roughly 1,800 nuclear weapons in exchange for security assurances from the U.S., the U.K. and Russia. Experts in nuclear weaponry have said that while Ukraine has a rich history of nuclear research and has deposits of uranium, it has never had key elements of nuclear industrial infrastructure critical for building nuclear weapons.

—Sabrina Siddiqui in Washington, D.C.

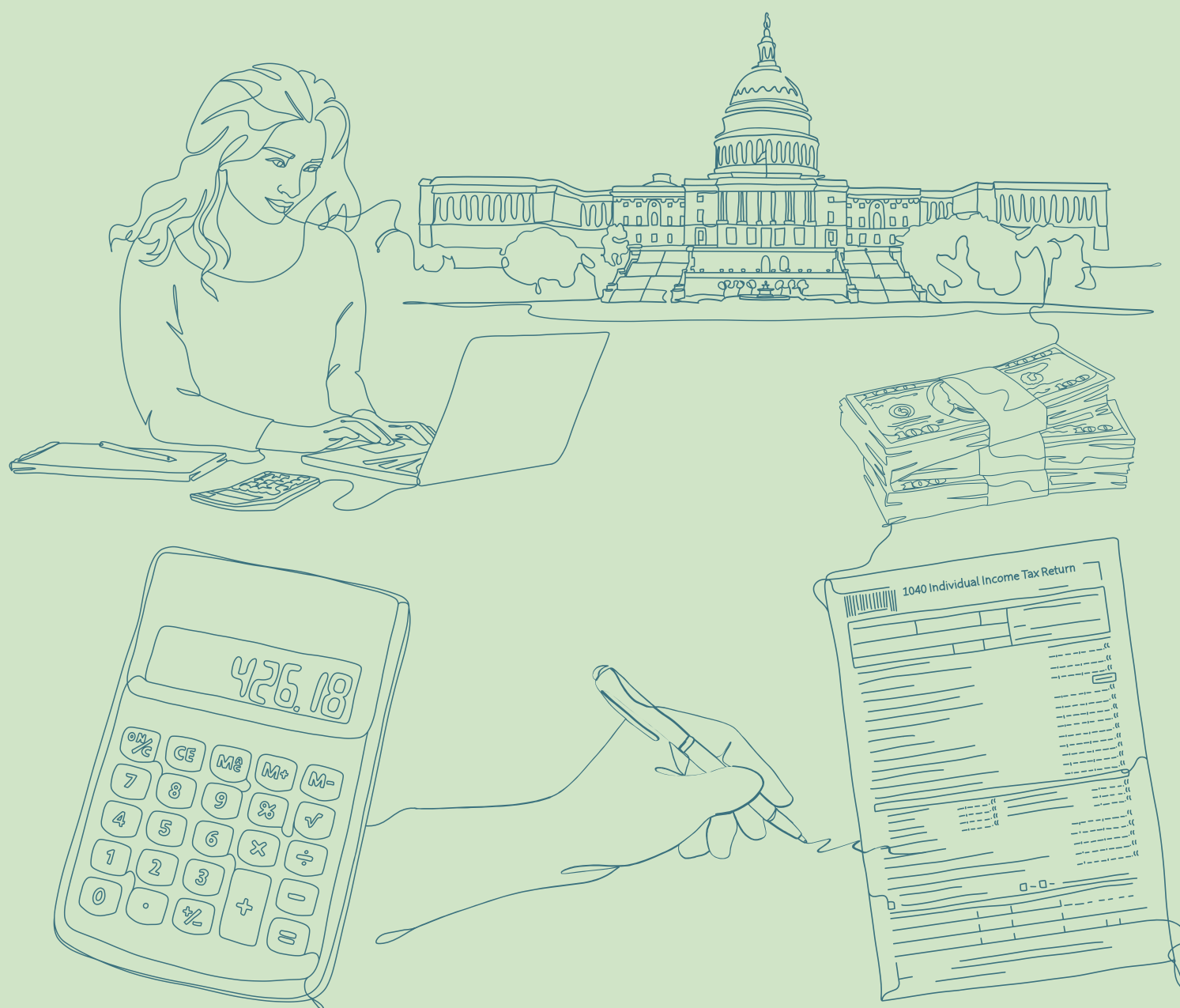
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THE UKRAINE CRISIS



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Russian forces seen on Sunday northeast of Ivankiv, Ukraine, moving in the direction of Kyiv. If the invading army enters the capital in large numbers, the war will enter a dangerous phase of urban combat.

Civilians Defend Homeland

Continued from Page One

trated Kyiv had been killed. “Stop the enemy everywhere, wherever you can,” President Volodymyr Zelensky of Ukraine said in a televised address late Friday. “Burn enemy vehicles with whatever you can.”

Ukraine’s ballooning popular resistance poses one of the biggest threats to Russian President Vladimir Putin’s plans for regime change in the former Soviet republic. The groundswell of ordinary people taking up arms against Russia’s overwhelming military power undercuts the narrative Mr. Putin used to justify his invasion—that the country

is led not by true Ukrainians but, as he said on television Friday, by a “gang of drug addicts and neo-Nazis who settled in Kyiv and took the entire Ukrainian people hostage.”

If Russian forces enter the capital in large numbers, the war will enter a dangerous and almost certainly bloodier phase of urban warfare in an ancient European capital sprawled across two banks of the Dnipro River that about three million people call home.

The popular resistance raises a real prospect for Moscow of a protracted war against counterinsurgent fighters that could drain Russian resources, embarrass the Kremlin and make its leaders even greater international pariahs as civilian deaths mount.

Ukrainian and Western officials said the Russian assault on the capital aims to kill or capture the country’s leaders and install a puppet government. But they also said Mr.

Putin has misjudged the will and ability of Ukraine’s army and citizens to fight.

At Polish border posts in the country’s southeast, a steady stream of Ukrainians who have been living in Poland have crossed over on foot and in cars, answering calls on social media to join the fight.

“Every truck company in Europe has Ukrainian drivers, and we are organizing ourselves to go,” said Vitalis Kos, a 38-year-old trucker, waiting to drive across the border. The car behind him, and another in front, were also carrying men to the front. “We’re not going to let him turn our country into Syria,” he said.

About one million Ukrainians live in Poland, a country that is fervently supportive of its eastern neighbor’s struggle. Arms and ammunition now flow across Poland’s European Union-flagged border.

“On social media, this is what people are talking

about,” said Pasha, a young Ukrainian hitchhiking a ride across another nearby border crossing. “I’m going to fight for my family, my girlfriend and all of Ukraine.”

Ukrainians’ spirits have been lifted in recent days by heroic tales of resistance, often in the face of massive Russian

Ballooning popular resistance threatens Putin’s plans for regime change.

firepower. Military officials said an army engineer had blown himself up along with a road bridge to halt a Russian tank column in southern Ukraine. Border guards on Serpent Island in the Black Sea responded negatively to a demand to surrender by a

Russian warship. They were wiped out by the Russians and would be posthumously recognized as Heroes of Ukraine, the state’s highest honor, Mr. Zelensky said.

The Russian president said his forces are mainly facing “nationalist formations” rather than regular Ukrainian army units, a claim ridiculed by Ukrainians of various backgrounds.

Protecting family and home is normal for anyone, said Mr. Batozsky, “even a fat Jewish boy” like himself, who fled the eastern city of Donetsk in 2014 when it was seized by Russian-led militants.

“We won’t retreat or surrender,” pizzeria owner Leonid Ostaltsev, a combat veteran, wrote on his Facebook page. “Together with the police, veterans, cultural figures, civilians and our army—we’ll show the world what UKRAINE is.”

“Welcome to hell Russian invaders,” he added in English.

Ukraine’s government this year established so-called territorial battalions of volunteer fighters who trained for just this kind of scenario. Now, the government is giving out rifles and ammunition to anyone willing to fight. Lines formed at distribution points, and authorities said they would have to bring in more weapons.

Territorial battalions have been hunting saboteurs, reinforcing police roadblocks and protecting infrastructure, such as bridges.

Mr. Batozsky, the political consultant, said he went to pick up a rifle on Friday after hearing Kyiv’s mayor, former boxing heavyweight champion Vitali Klitschko, appeal for all-out defense of the city.

He is coordinating preparations to resist Russian invaders with a group of friends known for their online activism.

“We are keyboard warriors,” he said, “but with guns now.”

Moscow, Kyiv Plan Discussions

Continued from Page One

the planned negotiations could affect the Russian military offensive, which has encountered much stiffer resistance from Ukrainian forces than expected by many in Russia and in the West.

“I don’t really have much faith in the outcome of this meeting, but let’s try, so that no citizen of Ukraine would think that I, as a president, didn’t try to stop the war when there was a chance, no matter how small,” Mr. Zelensky said.

Mr. Putin refused to take a call from Mr. Zelensky on the eve of Thursday’s invasion. Russian officials said shortly after the war began that they would talk to Kyiv only once Ukrainian troops laid down their arms. Mr. Putin later urged the Ukrainian army to stage a coup against the country’s democratically elected president.

That Moscow now seeks unconditional talks was celebrated in Kyiv as an achievement for Ukraine and its armed forces.

“The enemy is losing steam,” Zelensky adviser Oleksiy Arestovych said. “Another day or two, and the offensive will collapse.”

Mr. Putin, ratcheting up the stakes of his confrontation with the West, ordered Russia’s defense minister and chief of the general staff “to transfer the Russian army’s deterrence forces to a special mode of combat duty.”

He cited the threat of Western sanctions and what he described as aggressive statements from North Atlantic Treaty Organization officials.

The move would place Russia’s network of nuclear missiles, which is usually disconnected, into a state where it can be used if necessary—one step away from an actual missile launch, said Pavel Podvig,



People at the railway station in Lviv, Ukraine, on Sunday waited for passage to Western Europe.

a Geneva-based expert on Russia’s nuclear forces.

Ukraine, which has standing armed forces of about 200,000 service members, said it had mobilized an additional 100,000 troops in the past 48 hours. Russia massed some 190,000 on Ukrainian borders on the eve of the invasion, according to U.S. estimates.

Early on Sunday, Russian forces pushed deep into Kharkiv, an industrial city close to the Russian frontier. Many of the light-infantry troops were ambushed and killed or captured by Ukrainian forces hours later, however.

Footage shared by Ukrainian forces on Sunday morning showed five Tigr-M armored vehicles with Russian “Z” markings destroyed on a Kharkiv street, with Ukrainian soldiers helping themselves to Russian ammunition and equipment, including several antitank rockets. A Tigr-M also was seen burning at another Kharkiv intersection.

Residents said the city appeared to be under firm Ukrainian control by the afternoon. “We are finishing up cleansing the city from the enemy,” Kharkiv Gov. Oleh Synehubov posted on social media.

Ukrainian authorities have ordered Kyiv residents to stay indoors until Monday morning while they hunt for Russian infiltrators, who engaged in several shootouts with Ukrainian troops and civilian volunteers overnight. No shooting was heard during the day.

“Kyiv continues to hold out. There are no Russian troops in Kyiv,” Mayor Vitali Klitschko said in a video address.

The thud of explosions from Russian airstrikes and artillery continued in Kyiv through Sunday. A black plume rose on the city’s horizon from the fuel depot in the town of Vasylivka, south of the capital, that caught fire after it was hit overnight.

Residents of areas northwest of Kyiv, near the Chernobyl nuclear-disaster exclusion zone, said Russian armor continued to pour in from Belarus for an expected major assault on Kyiv.

Oleksandr Markushin, mayor of Irpen, a town northwest of Kyiv, said battles on Sunday resulted in the defeat of a Russian tank unit there.

Video posted by Ukrainian officials from Irpen showed smoldering Russian armored vehicles and corpses in Russian uniforms. Other videos,

from the nearby town of Bucha, showed charred and smoking remains of an even larger Russian column. Mr. Arestovych, the adviser to Mr. Zelensky, said the forces were hit by Ukrainian artillery, aviation and mechanized units, prompting other Russian forces advancing on Kyiv to make a tactical retreat.

Russia acknowledged on Sunday for the first time that it had suffered fatal losses, but didn’t release numbers and claimed that Ukrainian losses were several times higher. Ukraine has adopted a policy of not releasing military casualty figures.

Russian military spokesman Maj. Gen. Igor Konashenkov said Russia has hit 1,067 Ukrainian military targets since the war began, denied that Moscow was striking civilian targets and called on Ukrainian forces to surrender.

Mr. Arestovych warned on Sunday that, despite promises made by Mr. Lukashenko to Mr. Zelensky, Kyiv had informed that Belarusian armed forces were ready to enter the conflict on Russia’s side. He dismissed the military significance of such a move, saying Belarus had only some 45,000 troops, with only 17,000 of

them combat-capable, and that many would be reluctant to fight their Ukrainian neighbors. A ballistic missile fired from Belarus hit the Zhytomir airport west of Kyiv on Sunday afternoon, Ukrainian officials said.

With each day, Ukraine’s government has projected growing confidence, saying heavy resistance throughout the country had thwarted Mr. Putin’s plan to overthrow the Ukrainian leadership and destroy its command-and-control capabilities in a lightning strike.

“These three days have forever changed our country and the world,” Ukrainian Defense Minister Oleksii Reznikov said Sunday morning. “These will be trying times ahead. But now we are no longer the only ones to believe in our victory. And that is why we are receiving the aid that was unthinkable three days ago.”

Several countries that had previously declined to supply Ukraine with sophisticated weapons to help offset Russia’s military advantage have changed their minds in recent days, and the EU on Sunday made an unprecedented decision to fund Ukraine’s arms purchases.

Kremlin spokesman Dmitry Peskov said on Sunday that a Russian delegation had arrived in Belarus and was ready to start negotiations with Ukraine.

Mr. Zelensky made public on Sunday the creation of a new International Legion of the Ukrainian army, along the lines of the international brigades that helped defend the Spanish republic in the 1930s civil war there. Legislation allows foreign citizens to join the Ukrainian military, and Mr. Zelensky urged potential volunteers to contact military attachés of Ukraine’s embassies abroad.

“It’s not just a Russian invasion of Ukraine, it’s the beginning of a war against Europe. Against the unity of Europe. Against basic human rights in Europe,” he said. —Ann M. Simmons, Matthew Luxmoore, Sabrina Siddiqui and Nancy A. Youssef contributed to this article.

Russia Ships Fuel To Spots Near Front

By Joe Wallace

Russia holds most of the cards when it comes to energy in Europe. But in a territory it controls behind NATO lines, Moscow is taking extreme measures to shore up supplies as the war in Ukraine rages.

In recent weeks, Russia has steamed in three massive sea vessels carrying natural gas close to Kaliningrad, its bolthold on the Baltic Sea wedged between North Atlantic Treaty Organization members Poland and Lithuania. It is an apparent move to maintain fuel supplies to the tiny militarized region in case the conflict severs pipeline flows.

Russia’s invasion of Ukraine has spotlighted the pre-eminent role Russia plays in energy markets. It is one of the world’s largest oil producers along with Saudi Arabia and the U.S., and the main supplier of natural gas, used for heating and electricity in the heart of industrial Europe.

Russia’s moves to supply Kaliningrad show Moscow’s vulnerabilities but also its ability to prepare for conflict and use energy as a tool in its geopolitical arsenal.

The Energy Integrity and Velikiy Novgorod tankers are circling in the Baltic Sea and are expected to deliver gas to Kaliningrad in the coming weeks, according to analysts, vessel-tracking firms and a London-based shipbroker. Russia’s state gas giant, **Gazprom PJSC**, is in control of both boats.

Gazprom stationed a third vessel, the Marshal Vasilevskiy, off the coast of Kaliningrad in late January.

Between the three vessels, Russia has enough LNG to meet Kaliningrad’s gas needs for four to five weeks, Mr. Booth calculates.

THE UKRAINE CRISIS

BP to Sell Its Stake in Rosneft

By Jenny Strasburg

British energy company BP PLC said it would exit from its nearly 20% stake in Russian government-controlled oil producer Rosneft, days after it was pressured to unload the holding by U.K. officials amid Russia's invasion of Ukraine.

The British company faces a potential loss of as much as \$25 billion—encompassing the maximum possible impact of selling the Rosneft stake, valued at \$14 billion, plus a big expected charge related to foreign-exchange losses. Currently, BP relies on Rosneft for roughly one-third of its oil-and-gas production.

BP Chief Executive Bernard Looney and former CEO Bob Dudley will resign from Rosneft's board, the British company said.

It is unclear how BP will exit the Rosneft stake during a tumultuous time for Russian companies, which face a growing array of sanctions and limits on their ability to access the global financial system. All of that could affect BP's ability to recover the holding's full value.

BP's decision reflected a rapidly escalating pullback by Western businesses facing moral and political pressure to sever Russian relationships following the country's military campaign against Ukraine.

Norway on Sunday said it would move to freeze and banish Russian assets from its more-than-\$1 trillion sovereign-wealth fund. European and U.S. officials said they planned to cut some Russian banks off from the Swift financial network, a



Government-controlled Rosneft's stand at the Eastern Economic Forum in September in Russia

core conduit for international payments in foreign trade. And the world's largest cryptocurrency exchange, Binance, said it is taking action against sanctioned parties, potentially crippling flows of wealth that travel outside traditional banking channels.

Analysts and bankers have said another government-sponsored buyer could be interested in acquiring BP's Rosneft stake, citing the Qatari sovereign-wealth fund's Rosneft holding and potential Chinese interest.

But rapidly changing events in Ukraine make any transaction more complicated than it appeared two weeks ago, making a Russian buyer or consortium of buyers look most likely,

bankers said Sunday. BP would do well to unload the stake quickly, even at a bargain price, while oil prices are rising, one banker said.

BP will no longer count on Rosneft dividends, the company said Sunday. A potential write-down of the Rosneft stake would be based on its carrying value at the end of the first quarter.

For BP, the pain will include \$11 billion in accumulated foreign-exchange losses on BP's books. That is because the change in the nature of BP's longtime Rosneft relationship will affect how those losses are accounted for, the company said.

The abrupt move comes af-

ter Mr. Looney held a roughly 20-minute video call Friday with Kwasi Kwarteng, British secretary of state for business, energy and industrial strategy. Mr. Kwarteng expressed deep concern about BP owning the stake.

BP board members held emergency meetings Friday and over the weekend to discuss the situation, said a person familiar with the matter.

The U.K. company is the most exposed of major oil-and-gas companies to Russia, analysts say. BP's 19.75% stake in Rosneft brought it \$640 million in dividends in 2021. Analysts expected 2022 dividends to be valued at well over \$1 billion.

Fierce Battle Waged In Communications

By Sam Schechner and Stacy Meichtry

In Europe's first full-scale ground war in a generation, the two sides are trying to marshal modern media to their advantage.

Russian President Vladimir Putin, in invading neighboring Ukraine, has wielded the Kremlin's vast communications apparatus and an army of on-line trolls to portray the Russian military as a peacekeeping force deployed to protect Russian-speaking Ukrainians.

On Saturday, Russia's communications regulator ordered the removal of reports from Russian media that describe Moscow's attack on Ukraine as an "assault, invasion or declaration of war," or face being fined or blocked. The regulator has in recent days also ordered blockage of Facebook in the country, and Twitter has reported that it is being restricted there.

Ukrainian President Volodymyr Zelensky, who has a smaller military, has moved to outflank Mr. Putin online. Ukraine ordered its phone carriers to shut down network access to phones from Russia and Belarus—making it so invading forces can't get online and post their own videos or send their own messages.

Ukrainian officials took to Facebook urging locals to remove road signs and disorient Russian troops. Since Friday, the country's cybersecurity service has created and publi-

cized multiple automated bots on the chat and social media app Telegram to citizens to report Russian troop movements and road marker tags.

When Russian media reported that Mr. Zelensky had called on his forces to lay down their weapons, the Ukrainian leader responded on Saturday morning with a video showing him on the street near the presidential headquarters in Kyiv, saying the reports were fake and urging Ukrainians to keep fighting. The Ukrainian-language video drew 3.2 million views on Facebook, and a similar post on Telegram was seen 3.8 million times.

Ukrainian officials also wielded social media to launch recruitment drives for foreigners and local hackers to join the fight. Supporters overseas have clicked to donate millions of dollars in cryptocurrencies to the Ukrainian military via addresses Kyiv posted on Twitter.

Mykhailo Fedorov, Ukraine's vice prime minister for digital transformation, on Saturday made an appeal on Twitter to SpaceX founder Elon Musk to offer the country internet-connection terminals using the company's Starlink satellites. Mr. Fedorov said Russia was trying to occupy Ukraine "while you try to colonize Mars."

Hours later, Mr. Musk replied that the satellite service was now active in Ukraine. "More terminals en route," he wrote.

"Thanx, appreciate it," Ukraine's main government account tweeted back.

Conflict Threatens Shortages

Continued from Page One
banks will accelerate their recent moves toward tighter money, or back off if they see a bigger risk to the global recovery.

The U.S. and its allies "issuing sanctions on Russia will have a reverberating impact on not only Russia, but the entire world," said Dawn Tiura, president of Sourcing Industry Group, a U.S.-based trade body. Western politicians and experts in the field believe that while there will be an impact on their own economies, sanctions will deter Russian President Vladimir Putin from escalation elsewhere.

Last week, oil prices hit \$100 a barrel for the first time in eight years. Aluminum is up over 20% this year to date and Russian-dominated palladium is up 26.7% over the same period. Wheat futures traded in Chicago jumped 12% last week to their highest level since 2012.

Some executives caution that it is too early to know how lasting the blows to supply chains will prove to be. They say that the effects of the war and sanctions are still unclear, that many companies can rely on stockpiles of parts and raw materials, and that Ukrainian wheat is mainly exported after harvest starting in August. Companies have bounced back from crises quicker than anticipated in the past.

Autos feel pinch

The car industry, which has long relied on extended cross-border supply chains, was among the first to feel the blow of the fresh economic dislocations. Leoni AG, which makes wire systems in Ukraine that it ships to European auto makers, last week shut its two factories in Ukraine and sent the roughly 7,000 employees home.

The next day, Volkswagen AG said that it could no longer get wiring systems produced in Ukraine and would have to stop production at plants in Zwickau in eastern Germany, the most important factory in VW's push into electric vehicles, and Dresden for several days this week. VW said it would have to furlough more than 8,000 workers until it could resume production.

Within hours of the invasion, car companies dependent on parts from China and Eastern Europe were forming task



VW stopped production at plants in Zwickau, above, because it could no longer get wiring systems produced in Ukraine.

forces to plot out alternative routes. "Ukraine is not central to our supply chain, but suddenly we discovered that when this part is missing, it is," a VW spokesman said.

Ukraine is home to 22 foreign companies like Leoni running 38 factories that make goods for the automotive industry, producing wire harnesses, electronics, seats and other products, according to UkraineInvest, a government body that promotes investment in the country.

"We don't have a problem today, but it's too early to tell if we have a problem," a spokesman for Mercedes-Benz Group AG said.

The disruption of commodity and raw materials supplies from Russia and Ukraine could worsen a global semiconductor shortage that has already been roiling businesses worldwide. U.S. semiconductor makers import neon gas, the chemical compound hexafluorocyclobutene, and palladium, which are used to make chips, almost entirely from Russia and Ukraine, according to Techcet, a research group that analyzes dependency on critical materials used in manufacturing.

Russia's MMC Norilsk Nickel PJSC mines 40% of the world's palladium, also used in catalytic converters to reduce vehicle emissions, as well as around 11% of global nickel production, used to make stainless steel and electric vehicle batteries, according to JP Morgan. Russia mines

around 4% of the world's cobalt, another battery ingredient; a quarter of its vanadium, used in steel making; and 3.5% of its copper, according to the U.S. Geological Survey.

Caroline Phillipson's breakfast food company, Your UnbelievableBowl, recently took in a big shipment of raw materials including nuts, seeds, berries and buckwheat, some of which come from the Black Sea region but have escaped any current supply snafus. Like many executives, she has been watching events in Ukraine with horror, upset by the loss of life and concerned about the prospect of further inflationary pressure. Supply-chain

Russia and Ukraine combined account for 80% of the world's sunflower oil.

issues have added some 20% onto the costs of her northeast England-based business over the past year.

"I can only envisage it getting a lot worse after this, with higher energy costs, and the cost of transport, the cost of ingredients, all going up," she said.

The disruption to transportation is worsening by the day. At least 22 tankers are being blocked by the Kerch Strait, a key Russian-controlled waterway, according to shipping track-

ers, because ports are closed. Greece, which operates up to a quarter of the global tanker fleet, is urging shipowners to pull their vessels from Russian and Ukrainian waters in the Black Sea, which is a choke point for several key commodities.

Russia and Ukraine combined account for almost a third of the world's wheat exports, 19% of its corn exports and 80% of the world's sunflower oil, according to Commerzbank AG, and much of that flows through Black Sea ports that are currently closed. Soaring grain prices adds to concerns for the mainly developing world countries, like Egypt and Indonesia, that rely on the shipments and where food prices were already rising.

An ocean vessel chartered by one of the world's largest food suppliers, Cargill Inc., was hit by a projectile off the coast of Ukraine in the Black Sea on Thursday. Minnesota-based Cargill, which operates an export terminal in Ukraine, said the ship is seaworthy and no one was injured.

Oleg Solodukhov, a partner at Kyiv-based shipping consulting firm Charterers, said one cargo of steel had been unable to leave the Ukrainian port of Mariupol after being informed Russian forces had laid mines at sea. Another cargo of iron ore couldn't leave the port of Youjine, east of Odessa, after Ukrainian authorities shut the facility, he said.

The interruptions are helping prevent local steel operations, like ArcelorMittal SA's giant plant, from restocking raw materials and exporting their goods out, ArcelorMittal said.

Ferrexpo PLC, a large exporter of iron-ore pellets to the steel industry, said it couldn't get cargoes out of the port of Pivdennyi, in southwest Ukraine. That caused global steelmakers like Japan's Nippon Steel Corp. and Austria's Voestalpine AG, who buy these pellets, to scramble for alternatives, according to a person familiar with the matter.

A spokeswoman for Voestalpine said the effects of the situation in Ukraine are currently difficult to assess, but the company has inventories and will use other suppliers. Nippon Steel didn't immediately respond to requests for comment. Market data shows that while Ferrexpo is smaller than the largest iron ore miners, its product is specific enough that finding an immediate replacement won't be easy.

Port closures

Further west along Ukraine's Black Sea coast, the Ukrainian government closed the port in Odessa after the invasion started, leaving Germany's Hamburger Hafen und Logistik AG, or HHLA, to hastily process a final two container ships at its terminal there before the last of its 480

employees left.

Philip Sweens, who runs the international business for HHLA, said closure of the harbor will be another blow for Russian trade, which has declined by quarter since Moscow's 2014 annexation of Crimea.

If the port remains closed for long, he said, "getting foodstuff and things people need into the country will be a problem. Ukraine is the breadbasket of Europe, so the first thing Europeans will notice will be food prices."

Since last year, major port congestion and difficulties in finding ships to get goods from Asia to the West, has pushed some companies to put cargo on trains that moved from China through Russia into Europe.

New trade route hit

This journey has become important as an alternative to already disrupted sea routes, said Glenn Koepeke, a senior vice president at FourKites Inc., a Chicago-based freight-tracking technology supplier. Mr. Koepeke said more than 300,000 containers, measured in 20-foot equivalent units, moved by rail from China to the European Union in the first six months of last year.

U.S.-based Flexport Inc., a freight forwarder, said it has stopped accepting bookings for its Asia-to-Europe freight rail service that runs through Russia.

With airfreight in the region also coming under pressure, Flexport's cargo freighters that usually fly over Russian and Ukrainian airspace between Asia and Europe are now taking a longer route over the Middle East, the company said. Russian airspace is the quickest route for flights between Europe and the Pacific Rim.

By Sunday, countries including the U.K., Poland and Bulgaria had banned Russian airlines from their airspace, according to flight-tracing service Flightrrader24.

Several freight forwarders, including Denmark-based DSV A/S and Germany-based Deutsche Post DHL, a unit of Deutsche Post AG, have suspended services to and from Ukraine and closed offices in the country.

French logistics operator Geodis said Friday it expects further airspace closures or airline-specific restrictions that could cause delays, reductions in capacity and rate increases. On Sunday, U.S.-based shipping giants FedEx Corp. and United Parcel Service Inc. suspended shipments into Russia, having earlier stopped doing so into Ukraine.

—Paul Berger and Benoit Faucon contributed to this article.

THE UKRAINE CRISIS

Measures
To Spare
Banks
Involved
In EnergyBY PATRICIA KOWSMANN
AND IAN TALLEY

The West is rolling out increasingly tough sanctions on Russia, but it is going out of its way to preserve the country's biggest source of revenue: energy exports.

In the latest example, the European Union said late Saturday that it had agreed with the U.S., the U.K. and Canada to eject some of Russia's banks from the global financial system's payments infrastructure, Swift. The move, if applied to all banks, would be powerful, essentially blocking money transfers in and out of the country. By cutting only some, Western countries are allowing payments, including for energy, to continue through banks not under sanctions.

Russia is one of the world's top oil and natural-gas producers, and energy exports represent half of the country's foreign sales. The country, now embroiled in a bitter war in Ukraine, provides around 40% of Europe's natural gas. The commodity heats the continent, fuels many of its power plants and is a critical input for a range of industrial processes. Russia's crude production is a major factor in the global oil marketplace.

As the U.S. and its Western allies wage economic war against the Kremlin to coerce it into abandoning its invasion of Ukraine, policy makers have tailored their pressure campaign to protect their energy supply, prevent a surge in oil prices and minimize the damage to their own economies.

"You can't get away from the fact that Europe still has a dependency on Russia," said Justine Walker, head of operations and risk at the Associate of Certified Anti-Money Laundering Specialists, even as observers argue the exemptions for energy sales dilute the sanctions' impact.

The U.S. imposed sanctions on Russia's largest banks—Sberbank and VTB—but provided broad exemptions on payments for purchases of crude oil, natural gas, fuel and

Policy makers have
tailored their
pressure campaign
against Russia.

other petroleum products. The EU, meanwhile, chose not to impose sanctions on them for now. Banks under current sanctions will be kicked off Swift, but others will be allowed to stay.

A senior Biden administration official said on Saturday that officials were carefully selecting which Russian banks to eject from the Swift network to minimize disruption of energy markets.

"We know where most of the energy flows occur, through which banks they occur," the official said. "And if we take that approach, we can simply choose the institutions where most of the energy flows do not occur."

The exemptions enable European nations and others to continue buying Russian gas and oil. That tempers prices, including for oil, which have jumped by roughly 40% over the past three months over concerns of disruption to oil markets from a conflict in Ukraine.

Higher oil prices boost the amount of money Russia makes for every barrel sold, and spur inflation across the world.

The Russian banks that aren't under sanctions include **Gazprombank**, Russia's third-largest bank and a key channel for foreign payments for oil and gas. Those banks provide an alternative channel for those payments.

The U.S. Treasury also issued exemptions for agricultural exports such as grain, another significant Russian export, and medical and other humanitarian supplies.



Smoke rose over the Ukrainian capital of Kyiv on Sunday morning, above. Below, people stood in line to use an ATM in St. Petersburg, Russia.

Behind the
Widening
Sanctions

Continued from Page One
weighing additional moves if Mr. Putin doesn't back down. Financial markets were braced for a selloff in the ruble and other Russian-related assets as soon as Monday.

Financial pressure on Russia increased on other fronts. BP PLC said on Sunday it would part with its nearly 20% stake in Russian oil producer Rosneft, after facing pressure last week from the U.K. government. Over the weekend, French authorities intercepted a cargo ship owned by a sanctioned Russian bank in French territorial waters and escorted it to port, where it remains in French custody.

Unified effort

The flurry of activity comes after an extraordinary few days in which Washington, Brussels and London dramatically shifted gears on how hard to hit Mr. Putin economically, according to officials and diplomats familiar with the discussions. Moving from a coordinated package of modest measures in the early days of the crisis, they accelerated to a more unified effort that backers say is, taken together, stronger than anything the West has thrown at one country, at one time.

The moves "are unprecedented, in terms of their scope against a major global economic power, their care in trying to avoid blowback against the sanctioners, and the cohesion of the international coalition doing the sanctioning," said Richard Nephew, a former senior U.S. sanctions official, who played a role in designing sanctions against Iran from 2006 to 2012.

Officials said they are reviewing sanctions on Russian companies and Russian billionaires, believed to be important to Mr. Putin's hold on power. Roman Abramovich, the Russian billionaire owner of Chelsea FC, a storied British soccer team, said on Saturday he would relinquish stewardship of the team. Mr. Abramovich hasn't been targeted with any Western sanctions, but he is among the best known of a handful of Russian oligarchs with far-reaching international business interests.

"We are targeting oligarchs' private jets, we'll be targeting their properties, we'll be targeting other possessions that they have," Liz Truss, Britain's foreign secretary, told Sky TV Sunday morning. "And there will be nowhere to hide."

The measures partially unplug Russia from Swift, or the Society for Worldwide Interbank Financial Telecommunication, a global messaging system for financial transactions. Swift is one of the primary ways that money moves be-



tween Russia and the rest of the world.

The debate over whether or not to disconnect Russia from Swift took on symbolic significance when Ukrainian President Volodymyr Zelensky publicly turned it into a measure of the West's resolve to oppose Mr. Putin. He personally lobbied European leaders to switch off Swift for Russian banks, according to people familiar with the conversations.

Suddenly, a wonky issue that rarely caught international attention was fodder for cable news. U.S. lawmakers of both parties latched onto the issue, and protesters outside the White House gates demanded that President Biden ban Russia from Swift. Diplomats said the public's sustained focus on Swift sent a signal that they needed to take action.

Out of the spotlight, American and European officials agreed on a potentially more powerful lever: depriving Russia's central bank of the ability to sell its prodigious foreign reserves to bolster its own currency.

The U.S., Europe and Canada pledged Saturday to prevent the Bank of Russia from deploying its \$630 billion stockpile "in ways that undermine the impact of our sanctions," they said in a joint statement Saturday.

Few precedents

The move directly targets the war chest that Mr. Putin has built up in recent years to help insulate Russia's economy from outside pressures. It has few precedents. Officials said Sunday they were confident they could put the measure in place by Monday morning.

On Sunday, EU foreign policy chief Josep Borrell said the measures could affect around half the reserves the Russian central bank holds.

The move could be a blow to Russia's financial system, limiting the government's ability to defend the ruble in currency markets, to make overseas purchases and to

backstop banks that have been targeted by international sanctions, economists and central-bank officials said.

"Symbolically speaking, it's a nuclear bomb in the world of global finance," said Sony Kapoor, chief executive of the Nordic Institute for Finance, Technology and Sustainability, an Oslo-based think tank.

U.S. officials said they have long been eyeing Russia's reserves. "That's an impressive war chest if you can use it—so let's make it useless," a U.S. official said. "People have put a lot of emphasis on the idea that Russia was sanctions-proof. We always thought that was a myth."

The wild card in targeting the central bank is that Russia might already have drawn down a substantial amount of its European reserves in recent months, according to people familiar with the matter. Roughly 22% of Russia's international reserves were held in France and Germany in June last year, according to Russian central bank data. A French official believes those numbers have changed significantly since then.

Western powers' decision to disconnect Russia from Swift will make it more difficult for Western companies to pay staff or buy goods from Russian counterparts. Some critics worried it might drive Russia closer to China's own payments system, threatening to weaken a global financial system dominated by the U.S. dollar.

In the short term, the move is a significant hit to the viability of the Russian financial system. Longer term, it "opens a whole Pandora's box" that might accelerate the development of a global financial architecture that is at arm's length from the West's ability to disrupt it, Mr. Kapoor said.

The move also came with a compromise that critics say will mute its impact. Eager to keep open ways to pay for Europe's open options to purchase from Russia, leaders there insisted on keeping some Russian banks con-

nected. European officials were hammering out which ones late Sunday.

Leaders and senior officials from the U.S. and Europe started discussing the scope and type of sanctions they could levy on Russia in November, as Mr. Putin began amassing troops on Ukraine's border, according to U.S. officials. Early discussions about Russia took place on the sidelines of the G-20 meeting in Rome in late October and at a climate summit in Glasgow in early November, as well as minister-level meetings in Indonesia in December.

Last resort

The move on Russia's connection to Swift had been part of early discussions over possible sanctions, but was seen as a last resort, according to diplomats.

Russia's \$1.7 billion economy, the 12th largest in the world, was so big, critics of the Swift option worried, that a move to remove it from the rest of the world's economy could hit growth in many ways—halting deals, trade and cross-border pay slips. Berlin and Rome, in particular, worried the move would hurt their economies disproportionately. Both buy a bulk of their natural gas needs from Russia.

U.K. Prime Minister Boris Johnson lobbied fellow leaders of the Group of Seven to consider it on a call Thursday. "We need a package that meets the gravity of the situation," he told fellow leaders, people familiar with the call say.

In Washington, Mr. Biden initially signaled that action on Swift wasn't on the table in the short term, telling reporters at a Thursday news conference, "It is always an option. But right now, that's not the position that the rest of Europe wishes to take."

For a few EU leaders, including German Chancellor Olaf Scholz, the agenda of a European Council meeting on Thursday was supposed to focus on agreeing to the bloc's

already-planned measures, he told reporters on his way into the Brussels meeting.

During the six-hour meeting, held without cellphones and with just a few aides present, leaders started to coalesce around the idea that the situation in Ukraine was deteriorating so badly that they needed to move further and faster. After approving a round of more modest sanctions in just a few minutes, the group dialed into a video call with Mr. Zelensky, calling from besieged Kyiv. He told them this might be the last time they saw him alive, according to several EU diplomats and officials.

"The silence in the room was impressive," said one senior EU official. Romania's president and leaders from Baltic countries neighboring Russia, who spoke straight after the call with the Ukrainian leader was over, were "in shock," the official said.

The growing consensus helped convince Mr. Scholz, the German chancellor, that the 27-member bloc would need to do more, EU officials said.

On Friday, Mr. Zelensky pressed Mr. Biden directly about ratcheting up sanctions in a phone call, officials said, echoing his public statements. By that time, senior Biden administration officials were discussing how to mitigate the potential fallout, particularly in the energy sector, of disconnecting Russia from Swift.

Because they had already imposed severe sanctions on Russian financial institutions, including some of its largest banks, U.S. officials said they felt taking action on Swift was a logical next step.

By Saturday, officials agreed to limit the Swift move to some, not all, Russian banks, according to officials, and Germany came on board, too.

Senior Biden administration officials—including top aides from the White House, Treasury Department and the State Department—were on the phone on Saturday repeatedly with European officials. They woke up counterparts in Japan in the middle of the night there to brief them on the discussions, one of the U.S. officials said. Mr. Biden signed off on the package just minutes before it was announced, the official said.

Officials were working late Sunday on the details. The U.S. and Europe were discussing how to better coordinate on specific banks targeted by the various rounds of sanctions, diplomats said, and which banks would be ejected from Swift.

U.S. officials are looking at additional sanctions on Russia, including more restrictions on the country's central bank, a widening of the institutions that could be banned from Swift, further export controls and more sanctions on Russian entities, people familiar with the discussions said.

—Max Colchester and Bojan Pancevski contributed to this article.

THE UKRAINE CRISIS

U.S. Takes Aim at China Over Russia Ties

Sanctions, U.N. debates seek to press Beijing not to support Ukraine invasion

By WILLIAM MAULDIN

WASHINGTON—The U.S. wants to pry China away from its tight partnership with Russia. One step, U.S. officials said, is making Beijing feel pain over Russia's invasion of Ukraine.

Washington is looking to gain from any divisions between Moscow and Beijing, the officials said, and Russia's full-scale assault on Ukraine is an opportunity to force China to choose between siding with Russia and maintaining valuable economic ties to Europe, the U.S. and other parts of the world.

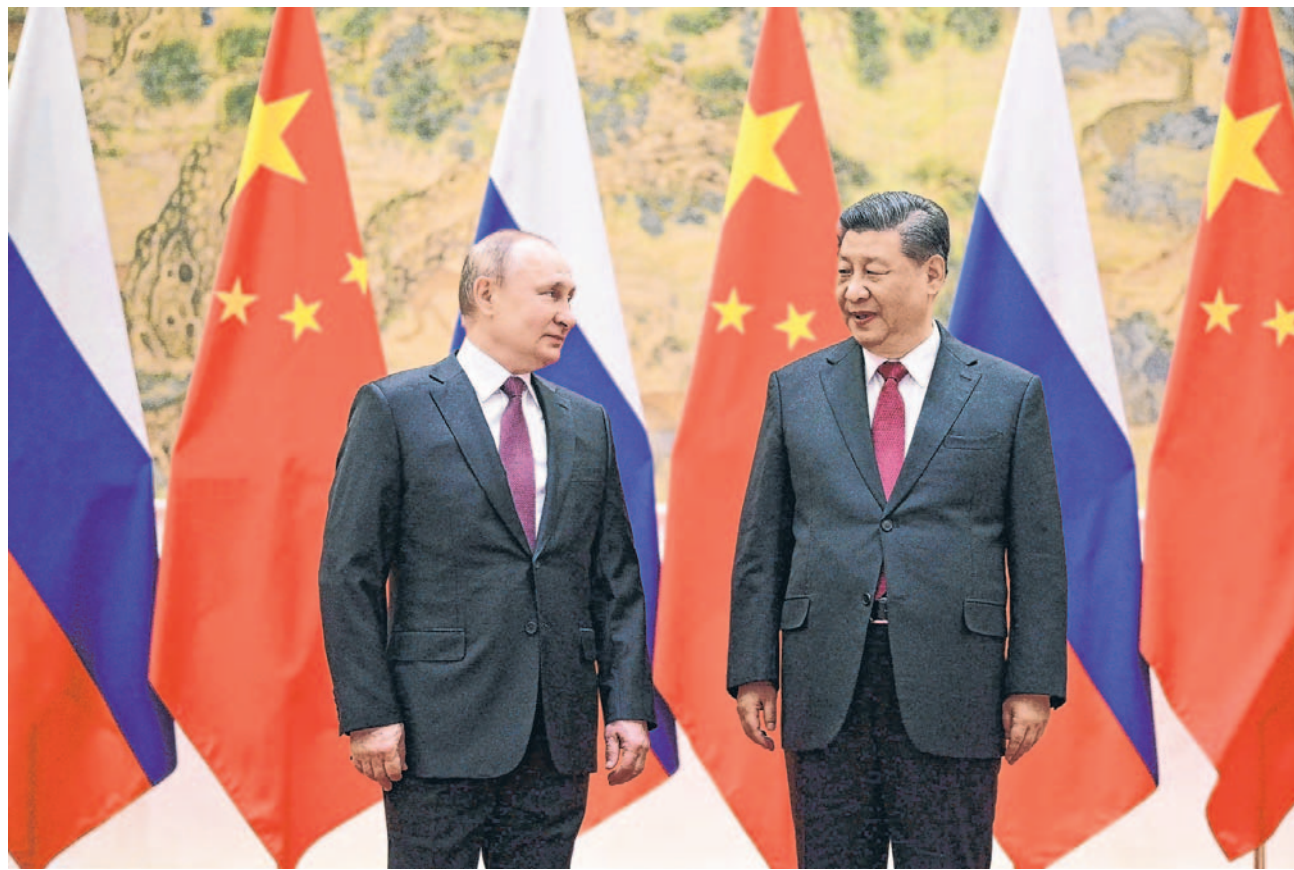
Punitive economic measures imposed on Russia, particularly export controls on certain technologies, would potentially hit China if its businesses and banks try to help Moscow, the officials said.

If China "or any other country wants to engage in activity that would be subject to our sanctions, they'll be subject to our sanctions," a State Department official said.

The U.S. is using international forums to force China to take a public stand on the invasion, an administration official said. At the United Nations Security Council on Friday, when Russia vetoed a U.S.-backed resolution requiring Russia to withdraw from Ukraine, China abstained, along with India and the United Arab Emirates, drawing criticism from the U.S.

U.S. Ambassador Linda Thomas-Greenfield said the countries that abstained were aligning themselves with the "aggressive and unprovoked actions of Russia."

The U.S. is pushing for a U.N. General Assembly debate this week on a similar resolution, with an eye toward dividing Russia from China, U.N. diplomats said. A meeting of the U.N. Human Rights Council in Geneva this week is another



Russian President Vladimir Putin and Chinese leader Xi Jinping met in Beijing on Feb. 4, a day before the start of the Winter Olympics.

opportunity.

China has called for a negotiated solution to the Ukraine crisis and has chafed at U.S. suggestions that Beijing will be tainted by association with Moscow.

"The truly discredited countries are those that want only to interfere in other countries' internal affairs and wage wars in the name of democracy and human rights," Chinese Foreign Ministry spokesman Wang Wenbin said in Beijing last week.

The Beijing-Moscow entente presents a geopolitical challenge for the U.S., potentially requiring Washington to prepare for conflict on both ends of the Eurasian continent, instead of focusing on what has been the Biden administration's top priority of countering China. Already, the Ukraine conflict has delayed release of key strategy documents on defense and national security as the administration works

through the new challenges.

Getting China to lessen support for Russia would further isolate Moscow over Ukraine, reduce the ability of the two to work together on other issues and call into question Beijing's reliability as a partner, the officials said.

The sanctions and other measures the U.S. and European allies are assembling against Russia, the officials said, also serve as a signal to Beijing of what it might face if it attacks Taiwan, a democratically ruled island that Beijing claims as Chinese territory.

Coaxing Beijing to ditch Moscow will require a combination of careful diplomacy and signaling, since the two governments see the U.S. as trying to blunt their global ambitions, former officials and foreign-policy specialists said.

If the administration proceeds down the path of seeking to divide Russia and China,

"we could make China feel very, very uncomfortable and perhaps rethink the advantages of being close to Moscow," said Bonnie Glaser, director of the Asia program at the German Marshall Fund, a

The Beijing-Moscow entente presents a geopolitical challenge for the U.S.

Washington-based think tank.

China has been struggling to adjust its public position on Ukraine since the invasion, trying to honor its partnership with Russia, while calling for negotiations and reiterating its long-professed principles of national sovereignty and non-interference.

China's balancing act has

proved difficult on the ground in Ukraine, despite the countries' robust trade and investment relations; China is a major purchaser of Ukrainian corn and wheat.

Under Chinese leader Xi Jinping and Russian President Vladimir Putin, China-Russia relations are as close as they have been since the Sino-Soviet bloc of the early 1950s, united by the leaders' shared goal to diminish U.S. power, which they see as aimed at hampering their interests. That was given bold expression when Mr. Xi hosted Mr. Putin on the eve of the Olympics, amid the Russian buildup of forces around Ukraine.

A 5,000-word statement released afterward criticized the U.S. and its alliances for undermining China's and Russia's security interests. It opposed expansion of the North Atlantic Treaty Organization—adopting the position taken by Mr. Putin

as he threatened Ukraine and marking the first time Beijing explicitly backed Moscow on a European security issue.

Since November, when the Biden administration began warning about Russia's positioning of troops in border areas near Ukraine, officials have tried to get Beijing to use its influence with Moscow to stop an invasion. In recent weeks, Secretary of State Antony Blinken spoke twice with Chinese Foreign Minister Wang Yi on the matter.

"We asked the PRC that they use that influence in a constructive way, in the first instance, to prevent war, and now that we're in the midst of an invasion to put a halt to it as quickly as it can be achieved," the senior State Department official said, referring to the People's Republic of China, China's official name. Another official said the outreach to China was similar to that to other countries that might have influence with Moscow, including Kazakhstan.

After the Putin-Xi statement this month, Biden administration officials huddled to discuss strategies for dealing with the Beijing-Moscow cooperation, people briefed on the matter said. The officials decided on a tactic to highlight the partnership and make China pay a price for it, the people said.

Escalating sanctions are among the sharpest warning flares to Beijing. The U.S. and European Union are largely cutting off Russia's financial sector from the Western financial system and ordering freezes of any assets in the West held by Mr. Putin and members of his inner circle. Export controls enacted by the U.S., the EU, Japan and others prohibit the transfer of critical technologies.

Washington is watching to see if Chinese financial institutions will try to fill the financing shortfall or whether Chinese technology companies will seek to skirt new limits on exports to Russia.

—Vivian Salama, Courtney McBride and Lingling Wei contributed to this article.



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THE UKRAINE CRISIS

GOP Divisions Emerge Over Russia Invasion

Crisis spotlights split between the Trump approach and push for more hawkish policies

The crisis in Ukraine has united Republicans around a common argument: President Biden has been too weak.

By Alex Leary,
Lindsay Wise
and John McCormick

But beyond criticizing Mr. Biden and broadly pushing for tougher sanctions against Russia, the GOP is divided on how to approach the crisis as it works to define a foreign-policy agenda following costly and unpopular wars in Iraq and Afghanistan and the continued influence of Donald Trump.

The party's internal debate is unfolding ahead of midterm elections that could hand it control of one or both chambers of Congress, along with the gavels of committees that help shape military and foreign policy.

Some Republicans have gravitated toward the former president's "America First" outlook limiting U.S. engagement abroad, while others say the Russian invasion demands American leadership as authoritarians across the globe seek to expand their power. Mr. Trump himself hasn't articulated how he would have handled the current crisis differently from Mr. Biden, beyond claiming that it wouldn't have happened on his watch.

"No matter where you stand on this Ukraine-Russia situation, what we should have done beforehand, what we should do now, the one thing I think everyone can agree upon is that the people of Ukraine are inspiring to the world," Sen. Marco Rubio (R., Fla.), a potential 2024 candidate, said in a speech Friday at the annual Conservative Political Action Conference in Orlando, Fla.

Former Secretary of State Mike Pompeo, also speaking Friday at CPAC, presented China as a larger threat to the U.S. than Russia, while only briefly mentioning Ukraine. "We've seen a Russian dictator now terrorize the Ukrainian people because Americans didn't demonstrate the resolve that we did from the four years prior," he said, after drawing criticism for recent comments, echoing those of Mr. Trump, calling Russian President Vladimir Putin savvy and shrewd.

Democrats and some in the GOP said the Trump administration, which included Mr. Pompeo, never demonstrated resolve when it came to Russia and was too accommodating to Mr. Putin's ambitions. In 2018, Mr. Trump stunned lawmakers of both parties when, standing beside Mr. Putin at a summit in Helsinki, he questioned the U.S. intelligence conclusion that Moscow meddled in the 2016 election. Mr. Trump also presented himself at times as a neutral peacemaker between Russia and Ukraine, a shift from the previous U.S. stance of advocating



Sen. Marco Rubio said Friday that 'the one thing I think everyone can agree upon is that the people of Ukraine are inspiring to the world.'

for Ukraine's sovereignty.

Joanne Terry, a frequent CPAC attendee from suburban Milwaukee who has Ukrainian heritage, said she doesn't want to see any significant U.S. involvement in the war there. "I think Biden should stay out of it," she said. "We can't oppose Russia. We can't stop it."

Until recent years, the GOP typically stood for social and economic conservatism and supported a strong overseas military presence. But some party figures, including the libertarian-minded Sen. Rand Paul of Kentucky, have argued against such interventionism, saying it distracts from concerns at home.

Mr. Trump harnessed that shift in his 2016 presidential run, during which he attacked Sen. John McCain, a Vietnam War hero and the 2008 GOP presidential nominee, and questioned the value of the North Atlantic Treaty Organization. He adopted a tough stance on international trade that most Republicans and even many Democrats have followed. As president he pushed for increased military spending but also repeatedly tangled with U.S. allies, brought some U.S. troops home from Germany and expressed respect for Mr. Putin.

Some Republicans and conservative pundits questioned the need for U.S. involvement.

Fox News host Tucker Carlson on Tuesday said viewers should ask, "Why do I hate Putin so much?" Mr. Trump on Wednesday called the Russian leader "pretty smart" and criticized Mr. Biden for "the weakness and incompetence" of his response. J.D. Vance, an Ohio candidate for the U.S. Senate, said on a podcast, "I don't really care what happens to Ukraine one way or the other."

Mr. Vance, who days later issued a statement expressing sympathy for Ukrainians, says the U.S. should pay more attention to its southern border, a view expressed by some speakers at CPAC.

Most Republican leaders

have taken a more aggressive stance. Senate Minority Leader Mitch McConnell of Kentucky, during a phone call with the president last week, pressed for tougher sanctions and said the U.S. should provide weapons and intelligence to a Ukrainian insurgency.

Two-thirds of Americans support the U.S. sanctions against Russia, including 79% of Democrats and 62% of Republicans, according to a Washington Post-ABC News poll released Friday.

The poll also found that Russia's image had fallen to a three-decade low, again with Democrats outpacing Republicans.

Germany Ushers In Policy Shift

Continued from Page One
mocracy from Russia and defend "every square meter" of NATO's territory. Like all NATO countries including the U.S., Germany has said it won't intervene militarily in Ukraine. But Berlin and other Western capitals are increasingly looking to aid Ukraine by all means short of direct involvement in the fighting.

Such rhetoric hasn't been heard in the Reichstag building, the historic seat of Germany's Parliament, in the post-World War II era, according to historians. It triggered both heckling from some opposition politicians and thunderous ovations from the majority of legislators.

Mr. Scholz vowed to cut Germany's reliance on Russian energy, in a reversal of policy going back decades that enabled Berlin access to cheap energy but tied it ever-closer to Moscow. Previous governments helped build two underwater pipelines to pump natural gas directly from Russia into Germany, and Berlin currently gets more than half of its natural gas and a quarter of its oil from state-controlled Russian exporters.

Having already suspended a pipeline known as Nord Stream 2, a flagship Russo-German project that would have replaced gas pumped overland through Eastern Europe, including Ukraine, Mr. Scholz said his government would also facilitate access to liquefied natural gas, or LNG, an idea long rejected by German leaders.

Rethought beliefs

Across Western Europe, governments and citizens shocked by Russia's war in Ukraine are rethinking some of their most cherished assumptions about the security of their continent.

When the Cold War ended in the apparent triumph of the Western model of liberal democracy and capitalism with a social safety net, most people in prosperous countries such as Germany believed the whole of the continent would converge with their political values.

Fears in the new democracies of Europe's ex-Communist east that Russia could reassert



German Chancellor Olaf Scholz at an extraordinary session of the lower house of parliament Sunday.

its claim to a sphere of influence, limiting its neighbors' independence, were viewed in the capitals of Western Europe as retrograde.

In Germany, France, Italy and elsewhere, much of the political and business elite has since the 1990s pursued a policy of engagement with Russia by seeking to deepen ties in business, diplomacy, culture, civil society and energy.

A German doctrine known as Wandel durch Handel, or change through trade, was a bet that boosting commercial ties would lead to friendly relations and keep in check the Kremlin's ambitions. That doctrine, declared in increasingly plain language in the past 15 years, helped revise Europe's geopolitical order.

Many European countries reduced their military capabilities after the Cold War, believing that a continental order based on economic interdependence had made war in the region obsolete. Germany, for example, slashed the number of main battle tanks from 5,000 in 1989 to 300 currently, while reducing its armed forces from nearly 500,000 personnel to around 180,000.

The European Union and NATO acted as guarantors of the longest period of peace and prosperity in their members' history, while West European governments touted their region's success as a model for the peaceful integration of the rest of the world.

China's increasing assertiveness in recent years has called into question Europe's faith that trade can guarantee friendly political relations.

Even Mr. Putin's invasions

of Georgia in 2008 and parts of Ukraine in 2014 didn't lead to a rethink.

The Russian leader's large-scale invasion of Ukraine, an increasingly democratic and Western-oriented country, has shattered all illusions.

Central and Eastern Europeans in countries such as Poland, Estonia and the Czech Republic are now feeling vindicated that their Western neighbors have awakened to the return of history to the continent.

"This long-term skepticism about Russia's intentions differs between countries that do have a memory of occupation and those who don't," said

Western Europe is rethinking cherished assumptions about its security.

Tomas Kopečný, deputy defense minister of the Czech Republic. "The sentiment is now on our side."

Mr. Kopečný said: "Having lived through the reality of Russia's occupation in the cloak of the U.S.S.R. brand, what is happening is not surprising, it is predictable."

Ukraine's embassy in Prague launched on Saturday a crowdfunding campaign, working with Czech defense experts, aimed at raising money for weapons purchases. Within one hour, \$250,000 had poured in from individual donors from the Czech Republic, Mr. Kopečný said.

Several other foreign em-

bassies in Prague have offered to donate as well, he said. The Czech defense ministry will help identify the weaponry most useful to Ukraine because the two countries' militaries use similar equipment. The equipment purchased will be escorted to Ukraine in private vehicles with a police escort, Mr. Kopečný said.

On Saturday, Germany's Mr. Scholz broke with the country's previous refusal to send Ukraine weapons, promising to supply Stinger and antitank missiles.

Now, Germany is talking about a rearmament of its own forces that was unthinkable just days ago.

Germany's most senior soldier said last week the country's army needed thorough rebuilding. "I wouldn't have believed that after 41 years of service in peacetime I would have to experience another war," Lt. Gen. Alfons Mais said in a statement posted on his LinkedIn profile. "And the armed forces that I lead are more or less powerless."

Annegret Kramp-Karrenbauer, Germany's defense minister until December, wrote last week on Twitter: "I'm so angry at ourselves for our historical failure." Referring to Russia's repeated attacks on neighboring countries in recent years, she added that "we have not prepared anything that would have really deterred Putin."

Shift by EU

The EU, an organization born of the dream of peaceful reconciliation and economic integration, said Sunday that it would finance the purchase of

weapons for Ukraine, an unprecedented step for the bloc. European Commission President Ursula von der Leyen called the decision "a watershed moment."

The EU also added to its sanctions on Russia by banning the country's planes. "Our airspace will be closed to every Russian plane—and that includes the private jets of oligarchs," Ms. von der Leyen said.

"We are back to an age of deterrence, the way it was conceived during the Cold War—only we have forgotten how to do it and must quickly relearn," said Andreas Rödder, professor of history at the Johns Hopkins University School of Advanced International Studies in Washington.

Mr. Rödder said Western political and business elites who had operated in denial about Mr. Putin's geopolitical ambitions—despite years of warnings from their Eastern neighbors—should now support the change of course that Mr. Scholz was charting.

"Putin acts within the category of Russian imperialism that has no regard for the sovereignty of lesser powers," Mr. Rödder said. "He is challenging the entire European order, which is based on accepting existing borders."

Mr. Scholz, who has been openly skeptical about Mr. Putin's authoritarianism ever since his days as mayor of Hamburg, realized the Russian strongman was rejecting Europe's security order when he visited him in the Kremlin for the first time earlier this month, according to a senior German official.

For much of the meeting, Mr. Putin elaborated his claims that Ukraine belongs to Russia and detailed how Moscow had been consistently wronged by the West since the fall of the Iron Curtain. It was then that Mr. Scholz understood Mr. Putin was planning to expand in an imperial fashion, the German official said.

The invasion of Ukraine launched Thursday dispelled any residual doubt that Mr. Putin was prepared to use force to back his claims on foreign territory. It was then that Mr. Scholz decided a fundamental shift in Germany's, and Europe's, defense posture was needed, the official said.

Mr. Scholz made public the imminent investment of about \$113 billion in new weapons systems, including Israeli drones and U.S. F-35 warplanes, to strengthen the West's ability to deter Moscow. The decision to buy F-35s is notable because Germany has

long preferred European defense-industry collaboration for big-ticket defense programs.

Since Mr. Putin ordered his troops into Ukraine, Mr. Scholz's government coalition of his Social Democrats, the environmentalist Greens and the pro-business Free Democratic Party has put an end to some entrenched policy taboos, including agreeing to send lethal weapons to Kyiv and suspending Nord Stream 2. The measures, all of which will be reflected in this year's budget, underline how profoundly Russia's attack on Ukraine is upending European politics.

"We have to ask ourselves: What capacities does Putin's Russia have? And which capacities do we need to counter his threats?" Mr. Scholz said to Parliament. "It's clear we will need to invest a lot more in the security of our country to defend our freedom and our democracy."

Hollowing out

For decades, Germany had managed to reconcile rising welfare expenditure with budget surpluses by constraining investment in defense and other areas, leading to what several high-ranking officers recently called a hollowing out of its armed forces.

Experts warned that the shift will be difficult and require a structural change inside the German military, the government and society.

Much of Europe and Germany in particular have for decades played down the significance of keeping strong armed forces, and recently the EU deemed the defense industry as environmentally unsustainable, in a way that could limit access to funding under new rules for the bloc, said Heiko Borchert, a defense consultant and academic.

Mr. Putin's aggression has now held up a mirror to the face of Germany, and the challenge for the government was to create a social acceptance for a radical policy shift of focusing on hard power and defense, Mr. Borchert said.

Even more than greater military spending, Germany needs a change of mind-set to match more-effective fighting capabilities with strong political will, said Erich Vad, a retired brigadier-general who was a military-policy adviser to former Chancellor Angela Merkel.

"Russia's expenditure is marginally higher than Germany's, yet our army is a laughingstock and theirs is menacing the world," Gen. Vad said.



Law, a coaching firm focused on helping lawyers pivot. Just don't hit send. Leave the diatribe in the draft folder of your personal email, or better yet, put it on paper, she says.

For the real deal, be gracious and express gratitude. Include up to three career highlights. (Any more and you risk being seen as a braggart.) And skip the passive-aggressive jabs.

By giving your notice, "the power dynamic has been leveled," Ms. Deutsch says. Use that new sense of control and confidence to share more authentically about yourself, not torpedo your relationships on the way out the door.

Some people are really ready to embrace candor as they peace out. When Marianna Virgili Filgueiras Leiro departed Amazon in December, she fashioned her farewell note like a breakup conversation. Subject line: "It's not you, it's me."

"I realized I need things you can't give me," she wrote to about 60 colleagues and shared on LinkedIn.

She has spent the months since working on the jewelry business she started during the pandemic, visiting family in her native Brazil and plotting next career steps that she hopes will allow more flexibility and freedom. Over her eight years at Amazon, the 30-year-old London resident struggled to adopt a more corporate persona, she says.

With her time finally ticking down, she thought: "Eh, whatever." "I don't care if people think I'm weird," she says.

When Michael Brown took an Uber home from his last day at Refinery29 five years ago, he already had the jokes for his goodbye email drafted. Then he went to log onto his work email from his apartment. His account had been wiped.

"I felt cheated," he says. "I want my chance to give my valedictorian speech."

He plowed ahead anyway, creating his own GIF, appending it to the end of a note from his personal email address and sending it to every company listserv he had committed to memory. (There were a lot; as a onetime community manager for the company, he had interacted with many teams.)

"It's kind of hard to think that when you leave somewhere, everything you did there doesn't matter anymore," he says. "You kind of want to leave a little bit of yourself behind."

He felt pangs of regret as soon as he hit send. Was it embarrassing that he had fought so hard to land in everyone's inboxes? Was the GIF, a clip of a viral internet star in huge sunglasses and a fur coat walking away from a computer, shady? Would he be black-listed?

Still, it was cathartic, he says. All the things that had vexed him about the job—the long hours, the missed promotion—lost their hold. He could move on.

"It is the mic drop," he says. "Thank you for your time. I'm gone."

How to Craft a Note-Perfect Exit

Goodbye messages range from classy to cringeworthy as millions of Americans leave their jobs



WORK & LIFE
RACHEL FEINTZEIG

On one of his last days at music-streaming company Pandora, Oriol Nieto pulled up his email and started typing a note to colleagues. It felt weird.

"I was like, 'This sounds wrong. This doesn't sound like me,'" the 38-year-old researcher with a Ph.D. in music-information retrieval says.

So he picked up his guitar. A few hours later, he had his farewell missive: "Goodbye Pandora—The Song."

"I'm leaving Pandora, last day will be Friday," the Oakland, Calif., resident croons in a YouTube video, wearing a company T-shirt, glasses and man bun. The chorus is his personal contact information, set to electric-guitar riffs. "Thank you all from the bottom of my heart, let's party hard once the pandemic has passed," he sings.

Nearly nine million Americans left their jobs in the final two months of 2021, according to federal data. That means millions of goodbye emails—some inspired, some classy, some cringeworthy—zipping through corporate servers. With big retirement parties canceled and in-person happy

hours converted to Zoom, a lot is now riding on that one note.

Some workers feel liberated as they type (or sing), expressing themselves amid a resignation wave that has led a number of them to embrace life beyond a steady paycheck. Others say they just want to find closure and cement a career legacy via corporate listservs.

Leaving the company where he had spent 5½ years was emotional, Dr. Nieto says. "Doing the song in a way helped me to kind of go through all of this processing."

While the goodbye letter is a chance to carve out finality for some, one person's email therapy could be another's alarm bell. Anthony Klotz, a management professor at Texas A&M University who studies resignations, says quitting can actually be contagious.

"They're seeing oh so many goodbye emails," Srikanth Velamakanni says of employees at his artificial-intelligence company, Fractal Analytics Inc. Workers wonder: "Why are so many people leaving?" the chief executive says.

The company, based in New York, has doubled its head count

to 3,500 over the past 18 months. Attrition has increased by nearly 40% in the past year, thanks to a hot hiring market for AI talent, Mr. Velamakanni says. That translates to a couple of goodbye emails a day, some of them two to three pages long.

Fractal executives mulled restricting access to the all-company listserv to stem the tide, but decided signaling trust and transpar-

chance and hearty back pats at farewell lunches. Informal gossip networks carried the news organically. We would then move to a new place, donning new clothes, commuting to a new office.

Such rituals help us move from one identity to the next, Dr. Klotz says. Now, changing a job often means closing a laptop in our bedroom on a Friday and opening it again on Monday, armed with only a fresh company login.

"It can leave you in a new job



Some workers feel liberated; others say they just want to find closure.

still having nostalgia, regret and longing," he says.

Some workers fantasize for years about what they will write in a goodbye note, settling scores and getting the last word about the time the boss humiliated them for a typo, or the anniversary trip they had to cancel because of work.

"Let it rip. Let everything out," advises Elena Deutsch, the CEO of Women Interested in Leaving (big

ency was more important.

"That doesn't necessarily mean the rest of the organization was convinced," Mr. Velamakanni says.

Fractal leaders also started encouraging new employees to send introductory emails to balance out the departures.

Work exits used to come with congratulations by the coffee ma-

Personal Boundaries Shifted in Pandemic

By ALEX JANIN

If it feels as if everyone you encounter is a close talker these days, you're not alone: Distances that would have felt comfortable for most people before the pandemic are much too close for many now, researchers and mental-health experts say.

Among a small group of subjects whose personal-space boundaries were tested by researchers at Mas-

50%

Average rise in personal-space requirements during pandemic

sachusetts General Hospital before and during the Covid-19 pandemic, personal-space requirements increased by 40% to 50% on average, says Daphne Holt, who led the study and is an associate professor of psychiatry at Harvard Medical School.

"In some ways, this might not be surprising given that people are practicing social distancing and have had understandable fears about the possibility of being infected with Covid-19," Dr. Holt says. "As your personal space is being intruded upon, you begin to feel in-

creasingly uncomfortable."

Though it varies, an individual's personal-space boundary pre-pandemic averaged between 2 and 3 feet, she says. Fear of infection, repeatedly triggered by new variants and combined with public calls for social distancing, may have temporarily altered the mechanism in our brain that monitors and dictates personal-space boundaries, Dr. Holt says.

"If we've been in a situation where we've been in danger or there's been a threat that's been persistent over time, the brain is very conservative," she says. "It takes a while to unlearn that sense of danger."

Tessa John-Connor, an artist and actress in New York City, says she has always valued her personal space but has become more sensitive to it during the pandemic. She has enacted a three-strikes rule when it comes to asking people to give her more room in public areas.

"I'm going to say it nice at first. If I have to say it again, the second time you're going to get a little bit of spice, and by the third time, you're liable to get cursed out," she says, recalling a recent exchange with someone at a Whole Foods in Midtown Manhattan. "We're not lovers. I don't need to feel your body heat."

Ms. John-Connor, 30, has started using grocery carts to create distance behind her in lines while she

gives space to the people in front of her, she says.

Research indicates that personal-space boundaries grow with anxiety, fear and emotional challenges, says Michael Graziano, a professor of neuroscience and psychology at Princeton University. The neural mechanism that monitors space is activated by anxiety and danger,



Some supermarket shoppers have become more sensitive in recent years.

he says.

"It feeds into your movement system and it triggers a whole set of reflexes that you basically have little or no control over, causing you to step back, cringe, and make protective movements," Dr. Graziano says.

These reflexes explain why you

might unintentionally step forward when someone gets too close behind you in the produce aisle, or lean away from the gym-goer who hops on the treadmill next to yours.

Anthony Thompson, who works in sales and marketing in Denver, says he tries to keep as much distance from others as possible in

public settings, including by going to grocery stores at off-hours and taking corner seats away from busy parts of restaurants. He recalls recently sitting at a largely empty bar when two patrons selected the stools directly next to him.

"It instantly made me uncomfortable," says Mr. Thompson, 35.

"There are other seats available. Why are you sitting here?" He says he soon left.

For some, the anxiety around space and social interaction has become overwhelming after distancing six feet. Gauri Khurana, a psychiatrist specializing in anxiety disorders, says she has been taking on more patients as the world reopens and people with underlying or dormant anxiety struggle to confront in-person interaction again.

Gradual exposure treatment may help those who find themselves anxious to be around other people in public, says Greta Hirsch, a psychologist and clinical director of the Ross Center for Anxiety in Washington, D.C.

She recommends creating a list of 10 things you are anxious about doing, such as dining at a restaurant or riding public transit, and safely working your way through them.

"Before I would go to a sold-out concert that has maybe thousands of people in it, let me first kind of do a warm-up act, like a movie theater where not every seat is occupied," Dr. Hirsch recommends.

As states ease some Covid-19 restrictions, social distancing is still encouraged or mandated in many public spaces. People have varying levels of comfort around personal space, says Princeton's Dr. Graziano, which will continue to create an imbalance as the pandemic continues. That said, don't expect the grocery-store line to fill you with dread forever.

"I don't think this is permanent," Dr. Graziano says. "Personal space has grown during the pandemic and will come back down again as the pandemic fades."

YASARA GUNAWARDENA FOR THE WALL STREET JOURNAL (2)

RICHARD B. LEVINE/ZUMA PRESS

PERSONAL JOURNAL.



TURNING POINTS
CLARE ANSBERRY

Disagreements over Covid-19 have divided families in ways that could outlast the pandemic, though many are trying to address them.

Andy Siegel and Caryn Hanrahan had their first pandemic-related blowup in 2020 during a family beach vacation, which ended with half the family leaving. They have since argued about haircuts, football games and vaccine mandates.

Now, nearly two years into the pandemic, the Atlanta couple say they have largely resolved tensions regarding an emotional issue that has left many families struggling to talk to, love and respect the people closest to them.

"We have different opinions, and that is going to have to be OK for us," says Ms. Hanrahan, a certified nurse midwife with a degree in public health.

"We're doing a better job understanding and respecting each other," says Mr. Siegel, who owns a small insurance agency.

The pandemic brought many families together and created lingering divisions in others. Heated exchanges over holidays, weddings, masks and vaccines have left families exhausted and sad. With current case numbers plunging and a possible end or containment in sight, some say they want a new start but are unsure if it is possible or where to begin.

Vaccinations have been among the most divisive issues. One in five Americans (19%) say disagreements over vaccinations have caused major conflict in their families, according to a recent survey of 5,721 adults by the Public Religion Research Institute and Interfaith Youth Core. The unvaccinated resent people who think they have the right to tell them to get vaccinated, the survey found, while the vaccinated are upset at holdouts they feel are putting others at risk.

Family battles have broken out over testing before birthday gatherings and whether unvaccinated cousins should wear masks to weddings. A grandmother in Florida says her unvaccinated ex-husband and son weren't told about her granddaughter's birthday party; they found out after seeing photos



on Facebook. "It created a real brouhaha," says the woman.

"A lot of relationship repair has to happen," says Elizabeth Dorrance Hall, director of the Family Communication and Relationships Lab at Michigan State University.

She says it helps to accept that other family members can have different, valid perspectives. If a conversation turns hostile, stop talking about the pandemic. Ultimately, time might be the best remedy, she says.

Pandemic conflicts are especially complicated because one person's decision about masking or vaccinating can affect the health of other family members, says Karl Pillemer, a Cornell University professor whose areas of focus include human development. It can also determine whether a family gathers for dinners and celebrations.

Dr. Pillemer, author of "Fault Lines: Fractured Families and How to Mend Them," cautions families against writing each other off

Covid-19 Rifts Divide Families

Loved ones try to bridge gaps over vaccines, safety as pandemic eases

based on the past two tumultuous years. At some point, the pandemic will end. "What do you want to have in your family at that point?" he asks. About 27% of American adults, which translates to more than 65 million people, are estranged from a family member, Dr. Pillemer says.

Psychologist Joshua Coleman, senior fellow with the Council on Contemporary Families, says he steers conversations away from vaccines when talking with his younger brother, who is against them.

"I'm never going to watch the videos he thinks I should watch, and he's not going to read the articles I send," says Dr. Coleman, who lives in San Francisco. He

says he knows his brother's concern about vaccine safety comes from a loving place and that it is better in the long run to focus on the good things about a relationship and person.

In July 2020, Mr. Siegel and Ms. Hanrahan, the Atlanta couple, and their four grown children went to Gulf Shores, Ala., for a vacation. Each took Covid-19 tests before they left, with negative results trickling in until the last one, which showed that a son who was asymptomatic had tested positive.

Ms. Hanrahan, who has elderly parents, packed her bags in a hurry and left, as did her two daughters from her first marriage and her daughter's fiancé. Mr. Siegel and his two children from his first marriage stayed.

Ms. Hanrahan, who wasn't comfortable going on the vacation in the first place, left 18 hours after arriving. Her husband was upset by the rushed, angry departure. "It

created a lot of ill will," she says.

After the trip, the couple, who married in 2003, went to marital counseling, which helped. Yet they say heated discussions continued over the safety of going to crowded football games and attending a work conference where masks weren't required.

Vaccine mandates, which Ms. Hanrahan generally supports and Mr. Siegel opposes, have been a recent flashpoint. They sought help in bridging those differences at a December workshop organized by Braver Angels, a nonpartisan nonprofit created to bring people with different views together.

Braver Angels co-founder William Doherty, professor of family social science at the University of Minnesota, moderated the discussion and asked the couple to present their views during the webinar.

Ms. Hanrahan started, saying she thinks private-sector employers should keep workers safe and vaccination requirements help them do so. Mr. Siegel, who doesn't require vaccines for his employees, said a government mandate on private employers can be an overreach and that his workers have their own private spaces, can wear masks and work remotely.

"I think people should have a choice," he said, according to a recording of the workshop, which was quickly followed by questions from Ms. Hanrahan.

"What about people who don't have a choice? What about the people who have to have a job, who are vaccinated, are immunocompromised and have young children at home?"

Dr. Doherty interjected and suggested that both acknowledge the other's personal and professional reasons for their views and seek points of agreement, rather than trying to persuade the other to come around.

They started again. Mr. Siegel said he knows his wife, as a public-health professional, wants to limit the spread of the disease. He said vaccines are one way of doing so, but he believes there might be other ways, too. Ms. Hanrahan responded, saying she knows mandating vaccines might cause repercussions for business owners, but from her perspective employee safety is more important than retaining employees.

Mr. Siegel agreed with his wife that employee safety comes first. "I'm surprised we actually agree on things," she says.

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ANATOMY OF A WORKOUT | JEN MURPHY

Try These Exercises To Stay Fit in Your 50s

People entering their sixth decade should do exercises that improve balance, strength and muscle symmetry.

For someone in their 20s and 30s, running an impromptu 5K or hopping on the tennis court probably won't result in any aches or pains. As we age, our bodies require maintenance to avoid injuries and preserve skills that will keep us mobile and independent.

According to a study conducted by researchers at Duke University in Durham, N.C., strength, endurance, and balance start to decline when we enter our 50s.

Minor muscle imbalances force you to favor using one side over the other when lifting or carrying objects, says Dale Collins, a Penn Valley, Calif.-based exercise physiologist and owner of online platform Achieving Fitness After 50. Larger imbalances often result in movement-compensation patterns. "If the muscles in your right leg are significantly stronger than those in your left they can pull downward on your hips and preload your lower back, increasing the risk of injury," Mr. Collins says.

Exercising each side of the body independently will help you identify imbalances, while also working the supporting muscles, tendons

and ligaments that cross your joints. Single-side strength work will also improve your balance and boost bone density.

The following exercises cover the areas of the body where muscle imbalances frequently occur, Mr. Collins says. Start by adding them into your workout once a week. Perform three sets of 10 repetitions. If you note an imbalance between sides while performing a particular exercise, incorporate that exercise into your routine two to three times per week until you see improvement.

The Workout

▲ Single-Leg Romanian Deadlift

Why: This exercise strengthens the muscles along the backside of the body, especially the glutes and hamstrings, while also aiding balance and stability.

How: Stand on your left foot, knee slightly bent. Hinge at the hips to bend

▲ Dale Collins performs a single-leg Romanian deadlift, above, and a plank.

forward. Extend your right leg straight behind you and lower your torso until it is almost parallel to the floor. Your arms can hang below the shoulders. Keep your hips square to the floor and don't let your lower back arch. Think about tightening your abdominal muscles to help protect the lower back. Pause at the bottom and squeeze the glutes to return to standing. Switch sides.

Option: Hold a kettlebell or dumbbell for an extra challenge.

▼ Plank with Alternating Arm Raise

Why: The core must work even harder to stabilize when you add movement to the standard plank pose.

How: Begin in a low plank position with elbows directly under shoulders and forearms flat on the ground. Your feet should be touching or no more than an inch apart. Alternate raising each arm off the ground and extending the hand out straight out, palm facing inward. Try to maintain level hips as you shift your weight.



ARTS IN REVIEW



ART REVIEW

‘A Trillion Sunsets’: Pictures Aplenty

A succinct show at the International Center of Photography looks at the proliferation of images in our lives

By RICHARD B. WOODWARD

The number of photographs taken and viewed since the mass adoption of digital cameras and the internet is so vast that art institutions cannot hope to fathom the global inundation. The figures are disconcerting. Back in 2013, Facebook wrote a white paper that revealed its users uploaded 350 million new photographs every day, a total by now long surpassed.

David Company, managing director of programs at the International Center of Photography, wants to allay our anxieties. His succinct and savvy exhibition “A Trillion Sunsets: A Century of Image Overload” puts pictorial hyperinflation into a historical frame. Bringing together some 40 artists from the past and present, the show argues convincingly that many of them, rather than feeling overwhelmed by the glut of images, have profitably mined it to comment on their times and on photography itself.

To help us relax, Mr. Company reminds us that worries about the fecundity of photography are at least a century old. The explosion of illustrated magazines in the 1920s alarmed intellectuals. On a wall in the first room is a quote from the German cultural critic and film theorist Siegfried Kracauer: “the flood of photos sweeps away the dams of memory. . . . The blizzard of photographs betrays an indifference to what the things mean. . . . Never before has a period known so little about itself.”

Anyone who has complained that the young no longer experience anything without snapping a picture of it on their cellphones will recognize the sentiment. The date of Kracauer’s gripe is 1927.

The show opens with photocollages by the German artists Hannah Höch and John Heartfield. The examples from Höch come from an unpublished 1933 scrapbook filled with photos cut from magazines and newspapers, experimental material for fuller compositions. Heartfield and his left-wing comrades would often appropriate photos first published in Nazi publications and embellish them as caustic satire. His 1935 cover for a German workers’ magazine shows an obese Hermann Göring putting a torch to the globe.

Walker Evans’s “Penny Picture Display, Savannah, Georgia” (1936) is a sort of “found” collage. A photograph composed of 225 smaller photographs—portraits of former customers at a photography studio—it’s a window advertisement. As Mr. Company notes, Evans was among the first to realize that photographic images were appearing everywhere across America by the 1930s, and that documentary-minded artists could no longer ignore them.

On a video monitor across the room from Evans is the prescient



Louise Lawler’s ‘Untitled (Gold Jackie)’ (1993), above; installation view of ‘A Trillion Sunsets: A Century of Image Overload’ at the International Center of Photography, below



and mind-bending “Frank Film” by Frank Mouris. Winner in 1974 of an Academy Award for Best Short Subject, Animated Film, it’s his autobiography about growing up middle-class in America during the 1950s and ’60s. Speeding across the screen are 11,592 separate images from magazines—TVs, sofas, dogs, tires, lipsticks, eyes, whiskey glasses—accompanied by a dual audio narration from Mr. Mouris. One track tells the banal story of his life; on the other, he free associates. A zany, deadpan, fugal lampoon of visual and consumer abundance, oddly underappreciated, the film belongs in any his-

tory of Pop Art. To illustrate the vitality of photocollage over the decades, Mr. Company has rounded up some of the usual suspects—Barbara Morgan, Harry Callahan, Romare Bearden, Andy Warhol, Robert Rauschenberg, John Baldessari—along with some recent converts. Justine Kurland’s photocollage “Eleanor” (2021) is an evisceration of Callahan’s 1984 book on his wife, the naked body parts rearranged into a sportive pastiche. Ms. Kurland has sliced up and remade dozens of photography books by white males as an attempt to exorcize their influence on her education,



proof that the creative destruction of photocollage remains for some an irresistible outlet for political expression. In many of the post-2000 works, computer programs and internet search engines are collaborators. The Catalan artist Joan Fontcuberta’s “Googlegram: Niépce” (2005) is his digital riff on the earliest surviving photograph, Nicéphore Niépce’s “View From the Window at Le Gras” (c. 1826). Processed through photo mosaic software and a Google Image search, the fractured picture is made from 10,000 pixelated thumbnail images that bring the chemically devel-

Walker Evans’s ‘Penny Picture Display, Savannah, Georgia’ (1936), above; Hannah Höch’s ‘Album (Scrapbook)’ (1933), top

oped original into sharper focus for the electronic age.

For his 2018 series “Shallow Learning” (a gibe at the AI term “Deep Learning”), Aaron Hegert applied Google’s “search by image” to some of his own photographs, but ones that were unpublished. Because the program is geared to look for images already published online, it generated only “algorithmic guesses” (Mr. Hegert’s words) as it scanned the internet for photographs similar to his. He selected one guess and put it next to his original photograph in Photoshop. The results were discordant composites, such as a cartoonish wildfire in a field, that exposed the differences between how people and algorithms see photographs.

Mr. Company is agnostic about the profligacy of photography and of software manipulation. But one of the merits of the show is that, while providing context for fears of image overload, it isn’t nostalgic. If photographers hope to reflect their era, they need to find out what’s possible with every descriptive tool available.

A Trillion Sunsets: A Century of Image Overload
International Center of Photography, through May 2

Mr. Woodward is an arts critic in New York.

CLOCKWISE FROM TOP: ARS, N.Y./AG BILD-KUNST; BONN; THE METROPOLITAN MUSEUM OF ART; JOHN HALPERN/ICP; SPRÜTH MAGERS/ICP

SPORTS



New York Mets pitcher Max Scherzer signs autographs for fans following a negotiating session in Jupiter, Fla. MLB says opening day will be delayed if there isn't a deal to end the lockout by Monday.

JASON GAY

Baseball Blunders Away Its Spring

A sport facing existential decline shouldn't force an extended work stoppage



Let's hammer the obvious: The delay of a professional baseball season is not a very big deal, given the chaotic state of the world at the moment. Actually, it isn't a big deal given the state of the world at any moment.

It's baseball! Gloves, caps, pepper, fungoes, spitting, sliding, red white and blue bunting on Opening Day. A harmless distraction, with sunflower seeds.

And yet here I am, as February turns to March, distracted, pecking words about it in a newspaper. Right now, pitchers are supposed to be convening with catchers, position players should be shagging slow-hit rollers, and instead the sun country diamonds of Florida and Arizona are unmarked and barren.

There's no joy in Mudville—or Bradenton, Dunedin, Tempe, Clearwater, Mesa, Surprise or Peoria.

Baseball's gone baseball, again. The nation's most self-sabotaging sport is once more setting its own shoelaces aflame, flattened by an

owners-ordered lockout threatening the season's start.

It's the latest in a series of maddening episodes that really make you wonder if baseball's true objective is to drive every last remaining fan into the warm embrace of hockey, or basketball, or lacrosse, or pickleball, or eating large sandwiches, or any activity marginally more fun and functional than the tormented summer game.

At issue: Money! Is it ever anything else? In short: The owners want to spend less, the players insist they can spend more. Drill deeper and there are disconnects about minimum salaries, age-eligibility for arbitration, competitive balance, salary caps, luxury taxes, and beyond, and there's a worrisome gulf between the parties as they attempt to renew a collective bargaining agreement that expired Dec. 1.

All of which means: no spring training, for now. No pitchers pulling up in custom trucks, no mobs around free-agent signees, no sunburned and sanguine managers

suggesting this really may be the year.

Right now we should be arguing about whether Max Scherzer (signed for three years, \$130 million) is the missing piece for the newly profligate Mets. We should be asking if the Braves can do it again. We should be enjoying the few weeks when it's possible to be an upbeat Pittsburgh Pirates fan.

Instead, we're trapped in numbers, and the negotiations. Baseball reporters are staking out a Jupiter, Fla., parking lot like LeCarre spies, monitoring players summoned to meetings.

Have you ever wanted the thrill of seeing Max Scherzer walking into a negotiating session? Me neither.

Is a resolution close? Unclear. Maybe. Hopefully. Players believe strongly that owners have the money to spend, and have been lowballing younger players, and especially minor leagues, for eons. Baseball is a sport in which a mid-dling middle reliever can afford a wine cave, but a minor leaguer might sleep in a car.

Owners, as usual, are trying to play out the clock and win the PR battle, knowing it's hard for the public to look at a sport in which someone makes \$30 million and think there's any kind of financial hardship. Never mind that the books remain opaque, and it is the owners, not players, who are the ones keeping the ballpark doors shut.

If it sounds familiar, it is. Baseball has been here before.

Amid the Nero fiddling, critical existential questions go unanswered. Baseball's national mindshare is shrinking—the timeless sport is considered out of sync with busy lives, its television ratings are in a funk, and efforts to accelerate gameplay aren't happening fast enough.

This is an entertainment crisis. As the Journal's Jared Diamond has chronicled, baseball is now a feast-or-famine sport—launch angle-obsessed hitters swinging strictly for the fences, pitchers on short pitch counts throwing full gas before yielding to the next gas thrower.

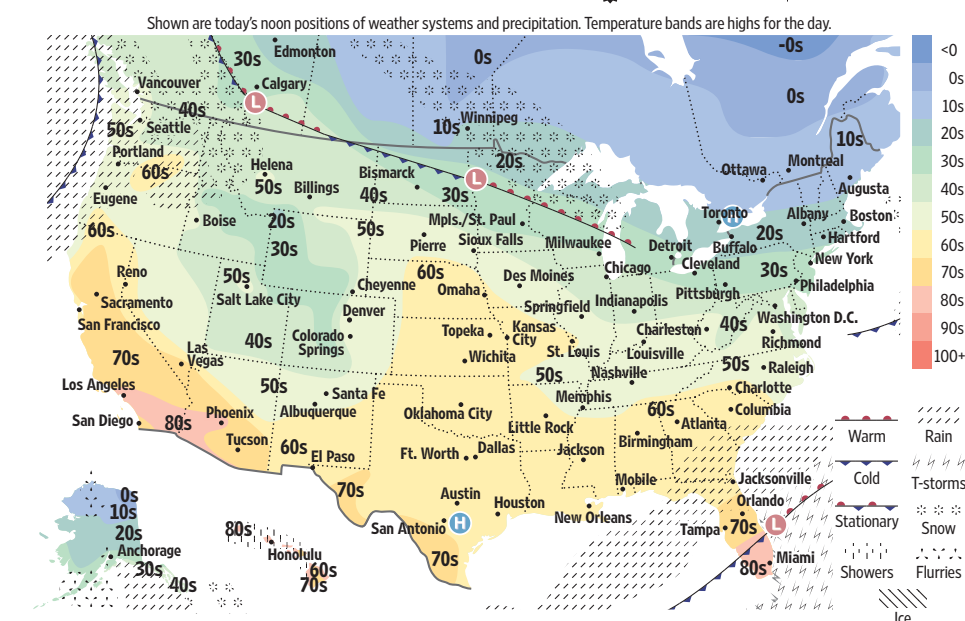
The interstitial stuff that gives baseball character—opposite-field hitting, stolen bases, don't even ask about bunts—is in shorter supply. It's to the point that even the most ardent baseball defenders—the folks who used to sniff, *If you don't like it, go find another sport!*—are now admitting: *OK, this needs a fix.*

Baseball seems to understand its predicament—in recent years it has begun making mild tweaks—but watching it try to modernize itself is like watching a 3-year-old try to put on socks and boots before preschool. What is taking so long?

Now, a potential work stoppage—a toxic pill for a sport with no credit to burn, that can't afford to push more viewers away. It's as if baseball is soaked in hubris, and doesn't really appreciate what it's up against.

As said at the top, none of this is a very big deal, considering the state of the world at the moment. Still, baseball should ask itself: What if the world just up and moves on?

Weather



Forecast and graphics provided by AccuWeather, Inc. ©2022

U.S. Forecasts

City	Today			Tomorrow		
	Hi	Lo	W	Hi	Lo	W
Anchorage	32	29	sn	34	23	sn
Atlanta	61	41	s	66	42	s
Austin	64	33	s	69	37	pc
Baltimore	45	27	s	58	36	pc
Boise	54	37	c	57	39	c
Boston	26	13	s	38	33	pc
Burlington	60	17	s	63	32	sn
Charlotte	67	35	s	73	41	s
Chicago	47	33	s	44	31	c
Cleveland	35	32	pc	44	33	c
Dallas	64	39	s	69	43	s
Denver	59	35	pc	64	38	pc
Detroit	31	27	pc	45	27	c
Honolulu	82	68	s	83	68	pc
Houston	64	40	s	70	42	pc
Indianapolis	49	34	s	53	36	pc
Kansas City	62	34	pc	70	41	s
Las Vegas	73	48	s	75	51	s
Little Rock	61	35	s	68	39	s
Los Angeles	83	56	s	85	55	s
Miami	82	66	pc	82	66	s
Milwaukee	43	32	s	43	32	c
Minneapolis	36	27	c	34	28	sn
Nashville	57	34	s	65	37	s
New Orleans	62	47	pc	66	48	pc
New York City	32	25	s	46	33	pc
Oklahoma City	63	35	pc	71	41	s

International

City	Today			Tomorrow		
	Hi	Lo	W	Hi	Lo	W
Amsterdam	49	36	pc	45	37	sh
Athens	54	46	sh	53	44	sh
Baghdad	76	50	s	78	55	c
Bangkok	95	78	s	96	79	pc
Beijing	57	29	c	51	23	s
Berlin	42	25	s	45	27	pc
Brussels	51	36	pc	49	37	c
Buenos Aires	79	63	s	76	65	s
Dubai	81	66	s	78	64	s
Dublin	49	32	r	46	41	pc
Edinburgh	50	34	c	49	33	pc

City

City	Today			Tomorrow		
	Hi	Lo	W	Hi	Lo	W
Frankfurt	48	28	s	47	29	pc
Geneva	50	30	s	52	33	s
Havana	80	62	pc	81	63	pc
Hong Kong	69	64	pc	71	65	c
Istanbul	48	35	sh	42	36	r
Jakarta	87	76	sh	88	76	t
Jerusalem	57	43	c	61	47	pc
Johannesburg	79	59	t	76	59	t
London	54	44	r	49	43	r
Madrid	61	36	pc	64	41	pc
Manila	92	78	s	91	77	pc
Melbourne	73	64	pc	75	65	r
Mexico City	73	44	s	76	46	s
Milan	53	35	s	51	28	s
Moscow	34	10	s	34	14	r
Mumbai	91	75	pc	92	77	pc
Paris	53	36	s	54	40	pc
Rio de Janeiro	88	75	s	90	76	s
Riyadh	79	55	s	81	62	s
Rome	57	35	pc	54	30	s
San Juan	83	72	pc	85	73	s
Seoul	50	36	c	50	24	pc
Shanghai	65	54	pc	59	40	r
Singapore	88	78	t	90	77	sh
Sydney	78	71	r	73	70	r
Taipei City	79	60	s	82	62	s
Tokyo	54	44	s	60	49	pc
Toronto	22	19	c	39	24	sn
Vancouver	49	45	r	52	42	r
Warsaw	38	20	s	39	21	s
Zurich	46	23	s	47	26	s

The WSJ Daily Crossword | Edited by Mike Shenk

GOOD FOR WHAT AILS YA |
By Rebecca Goldstein

Across

- 1 Smell
- 5 Des Moines setting
- 9 Recipe amts.
- 13 Get out of bed
- 14 Mani-pedi targets
- 16 Resting on
- 17 Symbol of eternity
- 19 Broil alternative
- 20 Decorate
- 21 Astros outfielder McCormick
- 23 Supporter's vote
- 24 Free-range animal area
- 28 Clinic address
- 31 Ending for some URLs
- 32 Blade cover
- 33 Hydrogen's atomic number
- 34 Crunched muscles
- 36 Hawke of "Boyhood"
- 38 Low-tech communication method
- 43 "That's a pity"
- 44 "You've got mail" co.
- 45 Co-workers of RNs
- 46 Completely unimportant person
- 49 Braying beast
- 51 Superlative suffix
- 52 Visual phenomenon at some raves
- 55 Good place to experiment with drugs
- 56 Anna's sister, in "Frozen"
- 57 Soccer setting
- 61 History chapters
- 63 Came down with something, and what each theme answer has done
- 66 Reason d'___
- 67 Exactly as expected
- 68 Wedding reception sight
- 69 Whispered summons
- 70 Lightest U.S. coin
- 71 Peepers

Down

- 1 Apex predator of the oceans
- 2 Ran out of juice
- 3 Munch Museum city
- 4 In fashion again
- 5 Business closing?
- 6 Wood for wine casks
- 7 Slight grimace
- 8 Honolulu hellos
- 9 Browser feature
- 10 Quarantine, perhaps
- 11 Flushes, e.g.
- 12 Utter
- 15 Secret store
- 18 Deets
- 22 Farmer's flock
- 25 Writer Lebowitz
- 26 Rainbow community letters
- 27 Hiking route
- 28 Ellipsis trio
- 29 Savory patisserie offerings
- 30 Redacted text coverings
- 35 Bounding main
- 37 Place in the sticks?
- 39 Mexican resort spot, familiarly
- 40 Pueblo material
- 41 Bread buy
- 42 Ultimatum ending
- 47 Battery brand name
- 48 Improv comedy rule of thumb
- 50 "Beat it!"
- 52 Be out, in a way
- 53 White House medical adviser Anthony
- 54 Barely-there amount
- 58 Site with a "Buy It Now" button
- 59 Heat in the microwave
- 60 Numbers on a board game box
- 62 Prepared
- 64 Scourge of sidewalks
- 65 Bit of a chuckle

Previous Puzzle's Solution

BARQS	BMAJ	LES
ABOUT	MIAMI	EMT
MIXANDMATCH	AAA	
AMYS	PIN	ADVIL
ALIVE	ANDWELL	
CARRY	LOSE	
ALI	LABRAT	LIME
BIGGER	RAND	BETTER
STAR	DRAYED	TRIA
ICEE	EAISES	
ROOM	ANDBOARD	
ASKED	INN	OMAR
SKA	RANT	ANDRAVE
TAP	ERIGEN	YEMEN
ARI	SKOR	ERECT

The contest answer is BLISS. Reduced to initials, the five theme answers can satisfy other clues: For example, M&M could use the clue for SKOR ("Piece of chocolate candy"). Similarly, A&W takes the clue for BARQS; B&B takes the clue for INN; R&B takes the clue for SKA; and R&R takes the clue for LEAVE. In top-to-bottom grid order, the first letters of those answers spell the contest answer.

► Solve this puzzle online and discuss it at WSJ.com/Puzzles.

OPINION

Putin's Victims in Guatemala



AMERICAS
By Mary Anastasia O'Grady

so well for the little dictator with big ambitions.

Among other things, Mr. Putin's aggression with his neighbors has sparked a renewed Russian outcry against corruption that is gaining world attention. Perhaps it can help Igor Bitkov, his wife, Irina, and their daughter, Anastasia, who more than a decade after escaping the dictator's grip in Russia remain in legal limbo in Guatemala.

In a country where politicians readily acknowledge that the U.S. wields enormous power, it is worth asking why the State Department refuses to help a family targeted by Mr. Putin's crime ring regain their freedom.

Russians aren't rallying around the flag since the invasion of Ukraine on Thursday morning, as Mr. Putin may have expected them to do. Many are telling pollsters that they reject the military strikes against their neighbor. Some have even gone to the streets shouting, "No to war."

The crackdown on these protesters is business as usual for Mr. Putin. But repression can't reverse a growing hatred of the Kremlin boss, whose estimated wealth is at least in

the tens of billions of dollars.

Russians know Mr. Putin didn't come by his wealth honestly. His business model is a combination of knee-capping, extortion, dungeons and murder. His courts are a farce. In the Journal a few days before the invasion, Russia scholar David Satter quoted a former constitutional-court judge who put it this way: "Any official can dictate any decision in any case." Ask opposition leader Alexei Navalny, last week given a show trial in a Russian penal colony for daring to expose Putin graft.

The Bitkovs had a successful paper-and-pulp business in 2008 when Putin henchmen offered to buy 51% of the company. The Putin political machine also asked Irina to become a party representative for Kaliningrad. The Bitkovs said no to both opportunities. Shortly thereafter, their 16-year-old daughter was kidnapped. They paid a ransom of \$200,000 and got her back after she had been held for three days and raped.

The family lost their company to Mr. Putin and fled. They eventually sought refuge in Guatemala in 2009, only to be arrested by local authorities in 2015 at the behest of a Putin-owned bank working with the U.N.'s International Commission Against Impunity in Guatemala, or CICIG.

As absurd as that sounds, it actually happened: A U.N. body deputized to fight corruption in Guatemala took instructions from Putin cronies to go after and lock up a refugee family. Worse, the U.S.

Embassy continued to endorse the commission's work.

The then-U.S. ambassador to Guatemala, Todd Robinson, worked closely with CICIG even as it became clear that the commission was violating the civil liberties of its targets, including the Bitkovs. Because the U.S. was the largest financier of CICIG, the family appealed to the embassy to protect their rights. They got no results.

The U.S. Embassy allowed the little dictator's persecution of the Bitkov family.

There was never any credible evidence to support Russia's accusations—filed with Guatemala's attorney general—that the Bitkovs had stolen from the Putin-owned VTB Bank. But the bank had its own problems. In 2018 the U.S. Treasury Department imposed sanctions on its chairman, Andrey Kostin.

VTB Bank's wild claims about Bitkov fraud went nowhere. But Russian proxies in Guatemala also had gone to CICIG and asked it to investigate the family for allegedly using false identity documents.

Mysteriously the U.S.-backed commission never investigated the law firm that had secured those documents for the Bitkovs in exchange for what it said were legal fees. It's also notable that

one of the lawyers inside Guatemala's migration office, who signed Anastasia's temporary residency card and many other false documents, was hired by the Guatemalan attorney general's office in 2014. In its investigation of the crime ring she was not investigated.

The Bitkovs were victims of a human-trafficking operation inside Guatemala's migration office, not members of it. In 2017 a court cited Guatemalan and international law when it ruled that as migrants they weren't liable for using the papers that the migration office had issued to them illegally. In April 2018 the constitutional court upheld that decision.

Three months later the same court arbitrarily reversed its decision. The Bitkovs are still fighting in court for their freedom while there are outstanding arrest warrants for an unknown number of officials who allegedly violated the law to obey CICIG.

At least four of those are fugitives being harbored by the U.S. That's because the American left still believes in the CICIG model as a way to advance its causes abroad wherever its agenda isn't winning at the ballot box. It wants to hide the fact that the commission not only failed but morphed into a tool of the thuggish Mr. Putin and unsavory characters in Guatemala. This is embarrassing for the State Department but by refusing to admit its errors, it is compounding them.

Write to O'Grady@wsj.com.

BOOKSHELF | By Andrew Stuttaford

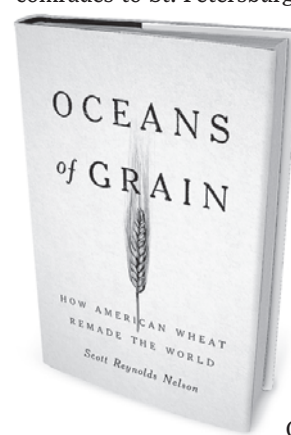
The Staff Of Life

Oceans of Grain

By Scott Reynolds Nelson
(Basic, 356 pages, \$32)

It was hard to read Scott Reynolds Nelson's original and intriguing "Oceans of Grain" without thinking of Woody Allen's "Love and Death": "The crops, the grains. Fields of rippling wheat. Wheat. All there is in life is wheat." Karl Marx looked at history and found class. Mr. Nelson tends to find wheat. Thus, in the 19th century, he writes, "the rise of Germany and Italy, the decline of Austria and Turkey, and the European struggle for empire all [had] more to do with the injection of cheap foreign grain into Europe than most historians have recognized."

Mr. Nelson has, he relates, been heavily influenced by the writings of Alexander Helphand (1867-1924). The pseudonymous "Parvus" was a radical journalist, a revolutionary (in 1917 he helped inspire Germany to send Lenin and some comrades to St. Petersburg to foment the revolution that



would knock Russia out of the war), a hugely successful businessman and much more besides. In Parvus's opinion, grain-trading routes (trading grain was one of his businesses) had preceded, made and shaped empires. They could also break them. Mr. Nelson agrees.

Like others who believe they have identified a key to the past, Mr. Nelson can take his argument too far. To take just one instance, he describes the British-led landings on the Gallipoli peninsula during World War I as an attempt to defend access to Russian oil in Baku and "to clear the vital path connecting the gullet cities in France and England to grain waiting on the Black Sea." However marvelous the term "gullet city"—Mr. Nelson has a way with a telling and descriptive phrase—these motives (which were real enough) weighed rather less than the more ambitious objective of bypassing the stalemate on the Western Front. More ambitiously still, some were even anticipating how they could pick apart the Ottoman carcass.

While Mr. Nelson can overreach, he makes a strong case that the wheat trade's contribution to history (the book is about much more than the American grain referred to in its subtitle) has not been given its due. And even those who disagree with his thesis ought to appreciate the extraordinary detail and entertainingly wild digressions that run through a narrative that has room for, to take a random sample, Roman milestones, Prussian logistics, one of Britain's greatest financial scandals, quite a bit of Marxism, the spread of white bread and Isaac Newton's (possible) prediction that the world would end in 1866.

The beginnings of Mr. Nelson's tale date back to antiquity, with grain (and, less productively, the plague) carried along paths that may have been the basis of nascent empires and often came to be absorbed by them. Controlling these routes could be a wellspring of wealth and power, as later demonstrated by the rise of Byzantium, with its "pinch point" across the narrow Bosphorus strait that connects the Black Sea (used to transport grain grown in the fertile black-earth zone stretching across parts of what is today southern Russia and Ukraine) with, ultimately, the Aegean and Greece's hungry cities.

Fast forward through the centuries (Mr. Nelson proceeds at a more leisurely pace) to find Catherine the Great's Russia purchasing grain on, essentially, credit, to feed the armies that won her the territories that could be used to farm wheat for export, much of it eventually funneled through the purpose-built port of Odessa to enrich Catherine's realm. Wheat exports to Europe from the young United States meanwhile were constrained by, among other factors, protectionism, distance, the dominance of the cotton trade and political efforts by pro-slavery interests to slow the westward expansion of wheat cultivation. It would, they feared, increase the clout of the free states.

The 19th-century struggle for empire had more to do with the arrival of cheap foreign wheat in Europe than most historians have recognized.

One by one these obstacles fell away. Distance was overcome by better ships, the rediscovery of ancient preservation techniques and the development of railroads linking the Midwest to the eastern seaboard. Tariffs started falling in the aftermath of the potato blight, which had led to the "hungry forties" across much of Europe, triggering catastrophe in Ireland and political turmoil elsewhere. And, of course, the South lost America's Civil War. Cheap grain from Russia had already transformed much of Europe's diet and facilitated the concentration of populations in cities that became centers of industry, commerce and capital, a process accelerated by the addition of bargain-priced American grain into the mix.

As we know, progress can come with a dark side. Mr. Nelson recounts how a "cereal corridor" from Antwerp in Belgium contributed to Prussia's victory in the Franco-Prussian War, a giant step along the way to 1914. The cascade of American grain, especially when paired with disruptive financial and other innovation (from underwater telegraphy to blasting out new trade routes with nitroglycerin) was, whether directly or indirectly, the source of mayhem as well as advance, responsible for busts, such as in the value of European farmland, as well as booms. The consequences of economic upheaval are rarely economic alone. The damage done to Austria-Hungary's lucrative flour trade was yet another factor undermining a tottering empire. On the other hand, imported grain was now so cheap that Europe's powers could safely tax it. "Grain tariffs," writes Mr. Nelson, "helped build railroads and battleships."

Unsurprisingly, Mr. Nelson maintains that "grain was key to almost every stage of World War I." Even if "key" and "almost every" overstates matters, he is right to stress the importance of food supplies (or the lack of them) to how the war was fought and to its outcome. He is also right to highlight Russian concerns over the Bosphorus pinch point as a cause of the conflict, although quite how proximate a cause is, like so much else about the early summer of 1914, infinitely debatable. Grain too played a critical role in the chaos that finally overwhelmed the Russian empire in 1917, and in the contest for its domains that ensued. That no small part of that revolved around Ukraine's rich wheatlands is not, this week, a reassuring thought.

Mr. Stuttaford is editor of National Review's Capital Matters.

Make Populism Pop Again



INSIDE VIEW
By Andy Kessler

Ukraine. Inflation rages. "I did that" stickers with Mr. Biden pointing at high prices are showing up on gasoline pumps across the country.

But with so many issues most Americans roll their eyes—sanctions, antitrust, climate, zzzz. Out of sight, out of mind. For 79-year-old Joe Biden's political survival, he needs a new slogan: "Out with the old, in with the bold." He should forget the Beltway babble and pivot hard to do something right in front of our faces.

Here's what I'd do: Announce the Biden Bonuses, a set of gestures providing "everyday Americans," as Hillary Clinton called us, exactly what we want. Yes, it's time to put some pop into populism.

Use the bully pulpit. Start with masks. A few control freaks still love them, but the rest of us know they're a charade—spit diapers, beard hats, facial disgracials. Encourage masking but declare it completely optional, especially on planes. HEPA filters and rapid circulation probably make planes the safest place to be near other people.

At the same time, flood the zone with Covid tests to prevent hoarding. Make them as plentiful as green M&Ms. Every home and office should have a bowl of rapid Covid tests. Two years on, this should have happened already.

Biden should use his bully pulpit to make simple changes most Americans want.

Speaking of travel, stop making us remove our shoes and belts or take our laptops out at airport security checkpoints. Everyone knows it isn't effective. Let's do random screening—every 20th passenger or so gets a thorough exam. And have the Federal Aviation Administration stop requiring that seat backs be returned to their upright uncomfortable position for takeoff and landing, though it's no problem if there's at least 37 inches of legroom, like in United's Economy Plus. Make standing up before it's your row's turn to exit a misdemeanor. And while travelers can wear headphones and eye masks to dull the senses, please forbid enchiladas, tuna-fish sandwiches or any olfactorily offensive meal on planes. Nearly all Americans will agree.

Speaking of food, announce the end of calorie labeling at restaurants. I know a Five

Guys two-patty bacon cheeseburger has more than 1,000 calories. Stop making me feel guilty eating it.

What else annoys voters? Save hours on Department of Motor Vehicles lines by ending yearly car registration—everyone knows it's a disguised property tax. End smog checks and inspection mandates for cars under 20 years old. I'd bet 99.9% of cars pass. And promote gas equity by making New Jersey and Oregon drivers pump their own gas. Hey, these Biden Bonuses are fun!

Immediately end subsidies for corn, ethanol, solar, electric vehicles, oil, gas, Amtrak, semiconductors and everything else. Americans hate seeing others get handouts. Which brings me to the Lobbyist Control Act: Legislators and lobbyists can meet only in an arena, maybe on Washington's Capital One Arena ice after a hockey game, armed only with 5-by-7 cards. Record every meeting, capped at 30 seconds a congressman—yes, like speed dating. No more food bribes at fancy schmancy restaurants. Most Americans also would be happy if their tax return fit on a 5-by-7 card. From the pulpit, keep bullying.

Have First Lady Jill Biden announce the end of tenure, originally meant to preserve freedom of expression at universities. How's that working out?

Americans spend more than seven hours a day looking at screens. I, for one, am

sick of the Geico gecko, the LiMu emu, the Progressive lady, Jake from State Farm, Allstate's Mayhem guy and especially that dumb Aflac duck. The insurance industry is already regulated for financial reasons—restrict these commercials to once a day. And make Matt Damon and Tom Brady apologize publicly for pitching crypto when bitcoin was \$66,000.

More seriously, a president needs foreign-policy chops. How can Biden add a little pizzazz to his? Why don't we appoint celebrities as ambassadors to rep the U.S.? Like Tom Holland for the Netherlands. I'd make Mike Tyson the ambassador to China—who would ever mess with him?

Mr. Biden would instantly get re-elected if he solved the homelessness problem. I'd suggest the homeless could occupy any empty office buildings. This will quickly get workers back to the office and force corporations, instead of failed government programs, to help solve the homeless problem by providing jobs and shelter.

Finally, force the National Football League to change its stupid overtime rules. Each team (hello, Buffalo) gets a possession, whether the coin-toss winner scores a field goal or touchdown. Yes, I know these Biden Bonuses are antithetical to progressive pieties and would be dead on arrival, but can't a guy dream?

Write to kessler@wsj.com.

Ukraine Will Never Surrender

By Stephen Ford

These are black days for Ukraine. But there was a time, not long ago, when the country was defined by a brighter color. In 2004 and 2005, the Orange Revolution stopped a Russian cronie from stealing a presidential election. The spirit of patriotism and pride I saw then is still there now, as Russia invades.

As a 17-year-old Christian missionary, I arrived in Kyiv in spring 2005. A host family took my parents and me straight to Maidan, the square in the heart of the city center. It was dotted with orange flags and signs emblazoned with a single word: "Tak," Ukrainian for "yes."

A few months earlier we would have seen many more such symbols—and hundreds of thousands of orange-clad protesters. They descended on Maidan after a rigged November 2004 runoff election

showed the pro-Russian Viktor Yanukovich winning the presidency against Viktor Yushchenko. Ukrainians, especially younger ones, wanted to draw closer to Europe and the West, not to increasingly authoritarian Russia. So they took to the streets with a simple demand: Redo the election, free of fraud.

Walking out of Maidan, I saw a handful of young Ukrainian women taping orange posters to the side of an old Soviet building. On Khreshchatyk Street, Kyiv's main thoroughfare, I also saw tents, either fully coated or flecked with orange. They were the proud remnants of a huge tent city where protesters lived as they demanded a revote.

They got it. The Ukrainian Supreme Court annulled the election and ordered another one for late December. In a widely monitored and fair revote, Mr. Yushchenko won.

It was a remarkable turn for a leader who had survived an assassination attempt a few months before. (One of the main suspects fled to Russia.) With his inauguration that January, the Orange Revolution came to a glorious close.

The freedom-loving spirit of the Orange Revolution lives on.

Throughout my time in Kyiv, hope for a future free of Russian domination was everywhere. But it was not to be. Political infighting, corruption and a lack of progress on integration with Europe paved the way for Mr. Yanukovich's narrow win in the 2010 presidential election. Three years later, he ditched a treaty bringing Ukraine and Europe closer together, choosing stronger ties

with Russia instead.

Another massive protest movement erupted, but this time people were massacred in Maidan by snipers. Mr. Yanukovich fled to his owners in Russia, which swiftly invaded Crimea. Since then the Russian shadow has loomed over Ukraine. With a full-scale war now under way, the country is at risk of being swallowed whole.

The Ukrainian people will fight—especially, but not only, in the country's west and center, where love of freedom runs deepest. In 2004 that meant making orange flags and setting up orange tent cities. This year, and likely for many years to come, it means making Molotov cocktails and setting up a resistance. Ukraine will never surrender.

Mr. Ford, a former chief speechwriter to Vice President Mike Pence, is founder of West Exec Writing.

OPINION

REVIEW & OUTLOOK

Ukraine Leads the World

Vladimir Putin's Ukraine invasion isn't going according to his script, and for that the world owes a great debt to the heroic people of that besieged country of 41 million. Their resistance against fearsome odds is an inspiration and has awakened the world to the menace of the Kremlin autocrat. Ukraine deserves more support to raise the costs of war for Mr. Putin with arms, the toughest sanctions, and global ostracism.

The brave resistance to Putin is an inspiration and lesson to the world.

Ukraine President Volodymyr Zelensky is proving to be the man for the moment as he rallies his country and the world to resist the invasion. "I need ammunition, not a ride," Mr. Zelensky said, in a line for the ages, in response to a U.S. offer to help him leave Kyiv to escape a possible assassination.

His leadership has put to shame the New York Times op-ed last week that ran under the headline, "The Comedian-Turned-President Is Seriously in Over His Head." His pleas on behalf of Europe's principles have helped to persuade European leaders that Ukraine's fight is also theirs.

The state of the battlefield is confusing as always in war, but the main news so far is the success of the Ukrainian resistance. Russia still doesn't appear to control a major city, and on Sunday Ukrainian forces repelled an attempt to take Kharkiv, the second-largest city. This operation was supposed to be a quick Russian march to Kyiv followed by a frightened surrender and the installation of a puppet government. Most Western analysts predicted the same.

They underestimated the tenacity of Ukrainians. The sight on TV and social media of Ukrainian civilians preparing to defend their cities is something to behold. Men with desk jobs are grabbing rifles, and teachers are making Molotov cocktails. This is a lesson in the price of freedom that ought to instruct Westerners offended by "microaggressions." Real aggression is a tank rolling down your street.

But Ukrainians shouldn't have to fight urban battles with bombs made in their kitchens, and Europe and the U.S. are finally sending the weapons to Ukrainians that should have been provided long ago. The U.S. is providing some \$350 million more in military aid, and the Biden Administration is asking Congress for another \$6.4 billion for humanitarian and military assistance. Congress should approve the request this week.

Even the Germans are stepping up, with Chancellor Olaf Scholz saying Berlin will provide 1,000 antitank weapons and 500 Stinger missiles. The Netherlands is chipping in 200

Stingers and 50 Panzerfaust 3 antitank weapons with 400 rockets. Sweden is sending antitank weapons, and many other countries are also contributing.

Former Ukraine Defense Minister Andriy Zagorodnyuk tells us there's an urgent need for bulletproof vests and helmets. The U.S. can also provide communications gear like tactical radios that will help small groups of Ukrainians carry out operations against Russian troops. As the war continues, the U.S. and NATO will need to develop means of supply from havens in Poland and other border nations. Air drops shouldn't be ruled out.

Europe, the U.S. and Japan are also strengthening sanctions in a meaningful way. The week-end decision to ban select Russian banks from the Swift financial clearinghouse is a positive step, though it looks like it will still exempt energy transactions. That is an unfortunate bow to the dependence of Western Europe on Russian natural gas. It will diminish the impact of the Swift sanction because energy exports are Mr. Putin's main financial lifeline.

Much of the world is also increasingly isolating Russia and Russians from travel and commerce. Sports leagues are refusing to compete in Russia, companies are refusing to do business, and Europe and Canada have closed off their airspace to Russian airlines. These may seem like symbolic gestures, but they send a message to the Russian people that their ruler is taking them down a blind alley.

Despite the good news, Ukraine's position remains perilous. Russian forces are still besieging several cities, including Kyiv. Mr. Putin is ruthless, as he showed in a Chechnya campaign that reduced cities to rubble. He could do the same in Ukraine if he feels defeat would jeopardize his political control inside Russia.

On Sunday Mr. Putin put his nuclear forces on high alert in response to what he called threatening comments from NATO leaders. But no one is threatening Russia. It's tempting to dismiss this as more of Mr. Putin's intimidating talk, except the Russian's public statements have been erratic and extreme.

The threats shouldn't stop the growing support for Ukrainian resistance. The stakes of this war are very high, including for American interests. Mr. Putin is trying to restore Greater Russia and make himself the dominant European state and a global power. He wants a new world disorder.

If he succeeds in Ukraine, breaking NATO will be his next ambition. The people of Ukraine are showing a too complacent West what it means to fight for freedom.

The Oligarchs Start to Squeal

After a weak initial effort last week, the U.S. and Europe are getting more serious about pursuing the wealth of Vladimir Putin's billionaire coterie. The countries said Saturday they're creating a trans-Atlantic task force to find and seize their ill-gotten assets.

The task force will "identify, hunt down, and freeze the assets of sanctioned Russian companies and oligarchs," said a senior Biden Administration official. "We'll go after their yachts, their luxury apartments, their money, and their ability to send their kids to fancy colleges in the West."

That's progress, assuming they follow through and expand the sanctions list to all the

right people. Dissident Alexei Navalny's outfit has named 35, and there are more. They can't stop Mr. Putin's marauding, but their squealing might get his attention.

Roman Abramovich handed control of his Chelsea soccer club to a foundation, perhaps for fear it might be seized if he controls it. The pro-Putin Russian television personality, Vladimir Soloviev, complained Friday about sanctions that might block access to his property near Italy's Lake Como. "Is this the Iron Curtain?" he said.

Ask your Kremlin keepers, sir. If you benefit from a regime that invades and murders free people, you shouldn't be able to enjoy the fruits of that freedom.

technological shifts in industries.

A 5-4 High Court majority stayed the rule in 2016. The Trump EPA then rescinded and replaced it with a narrower one regulating CO2 from coal plants. The Trump EPA found the Clean Power Plan "significantly exceeded" its authority, and the law "unambiguously" forbids the EPA from requiring generation shifting—e.g., coal to renewables.

Democratic states sued to block the Trump repeal and replacement. A 2-1 D.C. Circuit majority on Jan. 19, 2021—a day before President Biden's inauguration—vacated both, thus resurrecting the Clean Power Plan. The Environmental Defense Fund called it "the perfect Inauguration Day present."

In the D.C. Circuit's opinion, "Congress imposed no limits on the types of measures the EPA may consider" to reduce CO2 emissions as long as EPA considers the cost, air health and environmental impact, and energy requirements. The Trump repeal-and-replacement was unlawful, the judges held, because EPA perceived its authority too narrowly. Take that, Supreme Court.

The D.C. Circuit ruling would let the EPA re-engineer the grid and force businesses to replace gas-powered appliances with electric. The Biden EPA ironically argues the case is moot because emissions reductions that the Clean Power Plan was projected to achieve have already been met, and it's redoing the rule.

Yet Mr. Biden's goal is to eliminate carbon emissions from the economy. His unlawful vaccine mandate and eviction moratorium have shown that regulators will exceed their statutory authority unless courts stop them. Here's the chance to send that message to the EPA.

LETTERS TO THE EDITOR

Is the U.S. Military Ready to Rule the Skies?

Kate Bachelder Odell's op-ed "Fighter Pilots Need More Time in the Air" (Feb. 18) brings back many memories. In the late 1970s, I was an F-4E fighter pilot. Thanks to President Jimmy Carter and our Congress, the military budget had been cut severely. We were lucky to get 10 hours of flying every month. The typical airline pilot now flies about 60 to 70 hours a month.

We also had very few practice bombs and gun ammunition, so we did many "dry" attacks. That's when you have no real bomb or bullets, so you pretend you dropped a bomb or shot the gun. You faked it. And so we faked our proficiency. It was like an NFL quarterback and his wide receivers practicing without a football. We just pretended to throw and catch the ball. Every pass was a touchdown!

If Americans want their military to rule the skies in the next conflict, they need to make sure their fighter pilots get real footballs and many hours of practice.

MAJ. STEVE DALTON, USAF (RET.)
Easton, Md.

Lack of flight time is penny-wise and pound-foolish. Our latest generations of aircraft are prohibitively expensive. Poorly trained pilots not only lose in air combat, they make mistakes. Guys and gals dropping \$100 million airplanes into earth and ocean because of pilot error is a pretty expensive way to go.

The debate around guns and butter is old and feels a little pointless. The butter crowd won't vote for more guns until the wolf is already at the door. They have been raiding the defense cookie jar since the end of the Cold War. A rising China ought to be wolf enough, but old habits die hard. It's up to voters to change congressional priorities.

CONAN M. WARD
Princeton, N.J.

Live training for fighter pilots (and other warfighters) is essential, regardless of how many hours are spent training in a virtual environment. Yet having spent most of my 40 years as a software engineer working on simulation-based training systems for the Army, I must say Rep. Mike Garcia's assertion that simulators cannot provide the "practical experience of hearing 50 people on the radio at one time or seeing 60 to 80 planes in the sky" makes me ask, why not? Virtual simulators are ideally suited for training scenarios that are too expensive or too dangerous to carry out in real life.

PETER BERGGREN
Orlando, Fla.

Sadly, this is not the first time sorties and flying hours have eroded for fighters pilots. Fortunately, in the late '70s, a four-star general named Bill Creech took command of Tactical Air Command (TAC).

He recognized that the fighter force was losing its lethality. I served on his staff at TAC from 1981-84. Gen. Creech referred to this loss of flying as the "slippery slope." We were using our jets less than 20 times a month for less than 20 hours of flying. This came to be called the "ute rate." Gen. Creech attacked this issue with vigor. By the time I left his staff in 1984 and returned to flying the F-16, our ute rates had leapt to the mid-20s, with a corresponding jump in combat readiness.

When I was a commander, my pilots were getting close to 15-18 sorties and nearly 30 hours a month. Col. John Venable is spot on when he says a fighter pilot needs at least 200 hours a year. I think he needs more. I averaged almost 250 hours during my career. In this case, more is better. You never know if our country's survival might depend on it.

LT. COL. S.C. MISH, USAF (RET.)
Austin, Texas

Disputing Koonin on Greenland's Melting Ice

Steven Koonin's argument in "Greenland's Melting Ice Is No Cause for Climate-Change Panic" (op-ed, Feb. 18) is based on an incorrect interpretation of the plotted data, which comes from research by one of us, Mr. Mankoff.

Mr. Koonin claims that "the annual loss of ice has been decreasing in the past decade even as the globe continues to warm." While that is factually correct, it is an invalid interpretation, considering only the last decade and excluding previous periods. This is often referred to as "cherry picking."

A more correct interpretation of the plot is that the last decade has the highest average mass loss of the previous 120 years. This gives ample cause for concern. We also note that, from 1840 through 1900 (not shown by Mr. Koonin), the ice sheet was in approximate balance—not losing mass—making the current trends even more concerning.

There are several factors that ex-

plain a downward trend in the past decade, including atmospheric changes and associated effects influencing the regional climate, which on short timescales does not always reflect the increase in global average air temperature. What matters is the cumulative effect of Greenland Ice Sheet mass loss. If we add up the loss, which is always positive, the result is around 14,000 gross tons, equal to around 1.5 inches in sea-level rise since 1900 from Greenland alone. While this might seem small, it often causes flooding in cities that did not previously flood. Without changing our greenhouse-gas emissions, this growing contribution to sea-level rise will lead to increased flooding along many of the world's coastlines.

K.D. MANKOFF
Geological Survey of Denmark and Greenland
Copenhagen, Denmark

PROF. MARCO TEDESCO
Columbia University
New York

TV News and Entertainment

As a proud CNBC alum, I generally agree with Holman Jenkins that the network "conducts itself with an intelligence and intellectual rigor missing from other cable news channels" ("CNN's Downfall Is a New York Story," Business World, Feb. 12). Yet I recall that as a young producer there many years ago, my boss considered having me go on dressed up in a Merlin costume to announce each morning's futures and what it suggested about the market open. I never would have lived that one down, and I was glad the idea died on the vine. But the constant use of flashy graphics, zoom sounds and the rest should remind us that no matter how lofty the mission, elements of entertainment are usually not too far below the surface.

PAUL BRANDUS
Washington

The Second Indoctrination

Is it any wonder that college kids don't want to interact with each other, in or out of class, these days? ("Harvard Students Are Covid Sheep" by Julie Hartman, op-ed, Feb. 23). Your paper has covered the draconian Covid "precautions" most colleges have in place, essentially isolating students on campus, and sometimes on house arrest in their dorms. Isn't their behavior exactly what you would expect from young people treated like every one of them is a bag of infection, dangerous to everyone else? This indoctrination will be extremely difficult to eradicate.

CAROL A. KUJAWA
Everett, Wash.

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Seventy-Five Years Later, We Need a Strong Germany

William Galston's "Ukraine Invasion Marks an Era's End" (Politics & Ideas, Feb. 23) raises a crucial point. While stationed in Germany with the U.S. military four years ago, I often spoke about the need for a strong Germany. Americans seemed to view a Jew saying such a thing on a continuum from strange to stupid. Germans were relieved that an American Jew could see the nation they had become over the previous 70 years had earned a seat at the table of defenders of freedom.

All who cherish humanity and despise tyranny must come to terms with the fact that "never forget" is not only a call to remember the brutality of Nazism; it is a pledge that each generation must redeem in the face of the scourge, in whatever guise, that seeks to enslave and destroy.

RABBI KEVIN S. BEMEL
Los Angeles

Pepper ... And Salt

THE WALL STREET JOURNAL



OPINION

Putin Gambles That the West Is Weak

By Tony Abbott

The bullying of small nations by big ones, the trampling of justice and decency in the pursuit of national aggrandizement, and reckless indifference to human life, should have no place in our world.

Those were my words to the Australian Parliament on the morning of July 17, 2014, when a Russian missile battery had shot down flight MH17, killing 38 Australians among the 298 on board, as Russian proxies seized the Donbas. If it wasn't yet obvious in 2008, when Vladimir Putin invaded Georgia, it should certainly

Both militarily and culturally, we've been derelict in our duty to defend our civilization.

have been six years later, when he annexed the Crimea, that Mr. Putin was bent on the restoration of greater Russia—and to hell with the freedom and independence of the countries that were once part of the Soviet Union.

Yet since then, Western democracies have culpably failed to boost their military capability while indulging acts of economic and cultural self-harm.

Take the U.K., the West's second-strongest military power. The total number of British defense personnel dropped from about 600,000 in the 1950s to 300,000 in the 1960s and about 150,000 now. British forces in Europe declined from 80,000 in the

1950s to 50,000 in the 1960s to 25,000 in 1994 (still including one tank division), before dwindling to zero in Germany by 2020 and 1,000 in Estonia (placed there after 2015 in reaction to Russia's renewed threat). In response to Russia's blitzkrieg on Ukraine, the U.K. government has just announced that this force will be boosted to an armored brigade of fewer than 3,000. Given that the U.K. has provided by far the strongest response to the current crisis, it's little wonder Mr. Putin thinks the West is weak and easily distracted.

In 2014 I was criticized for contemplating the dispatch of Australian troops to Ukraine. Fortunately, this became unnecessary once the rebels' sponsors relented and allowed the repatriation of our dead.

In retrospect, Ukraine's fate was probably sealed when President Biden said last month that America might not respond to a "minor incursion" and definitively ruled out "boots on the ground." No consideration whatever appears to have been given to declaring a "no fly" zone for Russian military aircraft over Ukraine, even though that had been done to protect Iraqi Kurds against Saddam Hussein and would have given the Ukrainian army a much fairer fight against the Russians' greater numbers.

America's unwillingness to take risks to protect Ukraine, a democracy of more than 40 million people, is now fueling doubts about the risks the U.S. might run to help defend other countries that were once controlled by Russia—especially the Baltic states, which are part of the North Atlantic Treaty Organization. It's obvious that small countries are largely helpless in the absence of



Prime Minister Boris Johnson greets British air force troops Saturday.

collective defense and that countries that won't or can't fight an aggressor are doomed to negotiate the best possible surrender.

Yet the West's bigger surrender has been economic and cultural. For at least 15 years, much of Western policy has been directed to reducing carbon-dioxide emissions. In Australia, former Prime Minister Kevin Rudd declared that climate change is the "great moral challenge" of our time. The British Parliament, along with many others, has officially declared a "climate emergency." Last week, as the air raid sirens wailed over Kyiv, John Kerry worried that the Ukraine crisis would produce "massive emissions" and distract the world from climate change.

Reducing emissions is an important policy objective but should never be governments' main task—especially when it entails risking significant economic damage and putting national security at risk.

Europe has been busily closing down coal-fired power stations (and in Germany even emissions-free nuclear ones) only to become dependent on Russian gas that Mr. Putin can turn off and on like a tap. Here in Australia, we're set on closing coal-fired power stations without any base-load substitute even while our thermal coal exports surge to record levels (including to China, an even more dangerous strategic competitor than Russia). It's the private sector that's doing this, an unforgivable folly reminiscent of Lenin's reported quip that the "capitalists will sell us the rope by which we hang them."

Then there's globalization, which has undoubtedly made the world richer but at the cost (as we've only lately come to realize) of strengthening the West's competitors and exporting its manufacturing base. Free trade should continue to be promoted but principally between

countries with comparable standards of living and only between democracies that respect the rule of law.

The worst contemporary folly is the constant undermining of Western civilization, history and national virtues. Partly it is deliberate subversion by cultural Marxists, but mostly it's the polite acquiescence of diffident and historically ignorant people conditioned not to give offence. These days the rights of men who want to be women routinely trump those of women who don't want to face unfair competition in sport. Religious free speech is still OK, as long as it's not the Bible you're quoting. Martin Luther King's famous plea that his children be judged by the content of their character, not the color of their skin, would be denounced on most Western campuses as an example of "colorblind racism." "Monty Python's Life of Brian" couldn't be made today due to politically correct wowsers. And I wonder how many students are still taught to take pride in Australia Day, which celebrates the founding of a country that's as free, fair and prosperous as any on earth.

A Western world that has spent two years sacrificing freedom to preserve life is hardly going to sacrifice life to preserve freedom. Or at least that's how it must look to the hard men in Moscow and Beijing. As Churchill said of the Munich sellout in 1938, this is "the first foretaste of a bitter cup that will be proffered to us year by year unless by a supreme recovery of moral health and martial vigor we arise again and take our stand for freedom as in the olden time."

Mr. Abbott served as prime minister of Australia, 2013-15.

A Look at Ketanji Brown Jackson's Judicial Record

By David B. Rivkin Jr. And Andrew M. Grossman

Judge Ketanji Brown Jackson is known as a capable, diligent and collegial jurist. Hers isn't the straightforward ascent of most Supreme Court nominees. After a clerkship with Justice Stephen Breyer, she spent a decade as what she called a "professional vagabond"—a junior litigator at a Washington firm; an associate of Kenneth Feinberg, the lawyer known for administering compensation funds for victims of terrorism and other disasters; an assistant special counsel for the Sentencing Commission. She would be the first justice to have served as a public defender. One gets the reassuring sense that, like Clarence Thomas, Judge Jackson hasn't had her sights trained on a Supreme Court nomination since law school.

The same could be said of Judge Jackson's time on the bench. As a federal trial court judge in the District of Columbia (2013-21), she oversaw a docket consisting largely of run-of-the-mill employment disputes, contract cases, freedom-of-information actions, criminal prosecutions and the like. Her opinions are generally workmanlike, making it easy to discern the rare case that inspired her passion.

ordering then-President Trump's former White House counsel Don McGahn to testify before a House committee investigating purported Russian interference with the 2016 election. Judge Jackson rejected out of hand Mr. Trump's assertion of a kind of immunity from testimony recognized by the courts for well over a century. "Presidents are not kings," she wrote. "This means that they do not have subjects, bound by loyalty or blood, whose destiny they are entitled to control."

The decision rejects—and describes as "strident"—the government's argument that parties generally need authorization from Congress to bring suit in federal court. Congress did authorize suits over Senate subpoenas, but not House suits. What may seem an arcane procedural point speaks volumes: Much judicial mischief has involved courts appointing themselves to exercise power and impose liability in the absence of any law. Judge Jackson's rationale, echoing those of many Warren and Burger court decisions, is that the Constitution empowers courts to vindicate "intrinsic rights."

Also revealing is Judge Jackson's decision blocking a Trump policy expanding eligibility for "expedited removal" to aliens who have been in the country illegally for up to two years. The statute gives the Homeland Security Department "sole and

unreviewable discretion" over expedited removal, which should give the courts nothing to review. Judge Jackson asserted that although the policy itself was unreviewable, she could pass judgment on the "manner" in which the agency made it. She found it lacking based on the agency's failure to engage in notice-and-comment rulemaking and its failure to consider

Her opinions are generally workmanlike, making it easy to discern the cases that inspired her passion.

adequately the "downsides of adopting a policy that, in many respects, could significantly impact people's everyday lives in many substantial, tangible, and foreseeable ways"—which would seem to be a consideration of policy, not manner. The U.S. Court of Appeals for the D.C. Circuit reversed this ruling.

Judge Jackson was also reversed in a case in which she sided with federal-employee unions challenging presidential directives to streamline collective-bargaining terms, limit time spent on union business during work hours, and make it easier to fire employees for misconduct or

unacceptable performance. Her decision bends over backward to excuse the unions from the requirement that they bring disputes to the Federal Labor Relations Authority before going to court, and the D.C. Circuit reversed it on that basis. But her take on the merits also raises concerns. In her view, the government's general duty to bargain and negotiate "in good faith" precludes the government from taking topics off the bargaining table (like the availability of grievance proceedings for outright employee misconduct). She acknowledged that position went well beyond the governing precedent. While that would be a boon to the unions, it would disable presidential control of the federal workforce to account for changing circumstances.

Since joining the D.C. Circuit in June 2021, Judge Jackson has handed down only two opinions on the merits, both in the past month. The first, in another federal-union case, is notable. Siding again with the union, Judge Jackson rejected an FLRA decision holding that collective bargaining is required only for workplace changes that have a "substantial impact" on conditions of employment, as opposed to the much lower "de minimis" standard that had previously prevailed. The opinion concludes that the agency failed to ex-

plain adequately its adoption of the new standard—a holding that rests on what legal scholar Jonathan Adler called an "erroneous and unduly strict" application of Supreme Court precedent imposing a light burden on agencies changing their policy positions. They need merely "display awareness" of the change and identify "good reasons for the new policy." To this, Judge Jackson's opinion adds the requirement, which the Supreme Court had rejected, that the agency show the new policy to be better than the old one.

After reviewing so many of Judge Jackson's judicial opinions, we have no doubt of her capabilities. We can't discern whether she has any cognizable judicial philosophy that would guide her approach to the sort of fraught legal questions that the Supreme Court confronts term after term. Her loudest advocates are confident that she'll serve them well, and her record supports that view. With 50 Democratic senators, that may be enough.

Mr. Rivkin served at the Justice Department and the White House Counsel's Office in the Reagan and George H.W. Bush administrations. Mr. Grossman is an adjunct scholar at the Cato Institute. Both practice appellate and constitutional law in Washington.

War in Ukraine Complicates the Fed's Inflation Strategy

By Judy Shelton

How will the Russian invasion of Ukraine affect U.S. monetary policy?

Begin with the Federal Reserve's most pressing challenge: inflation. Gasoline prices, which account for 4% of the overall consumer-price index, had already increased in the 12 months to December 2021 more than any other good or service in the CPI basket—some 51% for regular unleaded gas at the pump. The war in Ukraine, and the West's response to it, will drive dramatic further increases in energy prices and push the CPI even higher.

Prolonged financial-market uncertainty caused by "geopolitical risk" could be as damaging to the American economy as rising inflation. Uncertainty increases rapid trading

moves and rattles stock, bond and commodity markets. In combination with already-frayed nerves over pending interest-rate hikes and continuing supply-chain issues, the opportunity to sow market instability grants Vladimir Putin a degree of leverage over American economic prospects.

A 2018 discussion paper prepared for the Fed Board of Governors defined geopolitical risk as "risk associated with wars, terrorist acts, and tensions between states that affect the normal and peaceful course of international relations." The study concludes that "exogenous changes in geopolitical risks depress economic activity and stock returns in advanced economies, most notably in the United States." Importantly, the analysis points out that "these adverse effects are sparked by heightened

threats of adverse geopolitical events, rather than their realization."

This factor—the capacity to threaten—plays to Russia's advantage. Portfolios are melting at the prospect of the conflict spreading. Fortunately Fed officials have indicated some awareness of Mr. Putin's readiness to wage asymmetrical financial warfare. The minutes from the Fed's monetary-policy meeting held Jan. 25-26 include a reference to "escalating tensions between Russia and Ukraine" as having weighed on equity prices. They also cite "the possibility of geopolitical turmoil that could cause increases in global energy prices or exacerbate global supply shortages." Further allusions to "developing financial and international developments" are more muted.

Now the two countries are at war, as the next Federal Open Market Committee meeting looms on March 15-16. To confront the surge in domestic inflation, Fed officials have been signaling their resolve to phase out easy money by raising interest rates. That would spook equity markets and reduce aggregate demand by curbing economic activity. It's one thing to accept the depressed economic activity and stock returns that higher rates bring in a deliberate attempt to slay inflation and achieve price stability. But it's another thing entirely to suffer such misery because a callous nation insists on invading its neighbor.

The Fed may be tempted to hedge its bets. Its role as lender of last resort is often justified by the possibility of exogenous shocks to the economy. The Fed typically responds to such shocks with highly accommoda-

tionary policy. But it shouldn't in this case. Instead, policy makers should play to the American economy's strengths. The U.S. has the world's most trusted reserve currency and its deepest financial markets.

The Fed has a responsibility to ensure the integrity of the dollar. In response to the Covid emergency, fiscal and monetary stimulus measures

The central bank ought to use this moment to reduce its significant footprint in financial markets.

were employed to excess. Now is the time for central bankers to address the swollen money supply and demonstrate the Fed's resolve to fulfill the mandate of stable prices.

Two options for reducing inflation through higher interest rates are available to the Fed: raising its administered rates or selling some of its balance-sheet holdings. The former approach would benefit commercial banks by paying them a higher rate of interest on the reserve balances they hold in depository accounts at the Fed. Money-market funds would also earn more interest on overnight reverse-repurchase agreement balances. The funds used by the Fed to pay interest on these balances come out of its own portfolio earnings, which are otherwise remitted back to the Treasury as revenue to the federal budget. American taxpayers might wonder why commercial banks, including the foreign-owned, should

collect higher interest on money sitting idle at the Fed.

It would be better if the Fed engaged in more traditional open market operations, reducing its trove of Treasury securities (\$5.7 trillion) and mortgage-backed securities (\$2.7 trillion)—not only to increase their supply to the market but also to reduce the Fed's own footprint in financial markets. The Fed's massive purchases of government-backed securities, more than \$4.5 trillion since March 2020, have obscured price signals and distorted investment returns; its holdings should be downsized.

Russia's belligerence has roiled markets, and international capital is looking for a haven in the U.S. The Fed's efforts to raise rates may be somewhat offset by these inflows, but engaging with markets and restoring price discovery as the means for determining appropriate interest rates will be a net benefit to the economy.

Free markets are America's strength. They enhance financial transparency by providing a window on aggregate expectations about developments. The Fed's immense capacity to provide dollar liquidity as needed around the world remains a powerful tool in its emergency arsenal—one that can be tapped to send the message that foreign agitators can't manipulate U.S. monetary policy.

Ms. Shelton, an economist, is author of "The Coming Soviet Crash" and "Money Meltdown." She served as U.S. executive director at the European Bank for Reconstruction and Development during the Trump administration.

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WORLD NEWS

North Korea Fires Missile, Signaling A Return to Tests

By TIMOTHY W. MARTIN

SEOUL—North Korea launched a suspected ballistic missile off its east coast on Sunday morning, Tokyo and Seoul authorities said, restarting weapons tests after nearly a month of inaction.

The single missile was fired around 7:52 a.m. local time from the Sunan area, Seoul's military said. It traveled around 185 miles and hit an altitude of more than 370 miles, before splashing into the waters between Korea and Japan, Tokyo's military said.

Japanese Defense Minister Nobuo Kishi criticized the test. "If their idea was to conduct this at an unguarded moment for the international community while it was responding to the Russian invasion of Ukraine, we absolutely cannot condone this."

North Korea said it had tested reconnaissance satellite technology, conducting "vertical and oblique photographing of a specific area on earth," according to state media on Monday. Systems for high-definition photography, data transmission and altitude-control devices were verified by the country's aerospace and defense science officials, state media said.

The rocket technology required to launch a reconnaissance satellite into space closely mirrors that of long-range missiles, weapons experts say. Pyongyang, while detailing a five-year weapons strategy policy early last year, listed reconnaissance satellite technology for military purposes as a key pursuit.

The Kim Jong Un regime started 2022 by conducting a flurry of missile launches. Its seven weapons tests in January were more than all of last year. But until Sunday, North Korea had stayed quiet since Jan. 30.

Some security experts said Pyongyang would have wanted to keep a low profile during the Winter Olympics so as not to embarrass Beijing, one of the regime's few allies.

In January, Pyongyang fired missiles from a train and from an airfield. Mr. Kim attended the final test of the country's self-proclaimed hypersonic technology, making his first in-person visit to a launch in

nearly two years.

The U.S. and North Korea haven't held formal nuclear talks in more than two years. The Kim regime has brushed off outreach from the Biden administration and has kept its borders largely sealed off throughout the pandemic. It has spurned offers by international relief groups to provide millions of Covid-19 vaccinations.

North Korea's Politburo, at a meeting in January, threatened to resume nuclear or long-range missile tests, having refrained from such behavior for more than four years. Pyongyang's dozens of missile launches in recent years have showcased shorter-range technology.

With global attention diverted to Russia's invasion of Ukraine, North Korea may see it as a chance to test weapons without as much risk of punishment, said Jean H. Lee, a senior fellow at the Korea program at the Wilson Center, a think tank in Washington.

"Regardless, I think Kim has his own timeline and goals for new weapons in 2022," Ms. Lee said. "He wants to have new weapons to unveil this spring. Tests get him closer to perfecting the technology."

A more distracted U.S. could also influence how North Korea views the prospects of denuclearization negotiations, should the Biden administration be forced to deal with a sustained conflict in Europe and juggle a tense relationship with China, said Go Myong-hyun, a senior fellow at the Asan Institute, a Seoul-based think tank.

"North Korea will be able to tell Washington: 'We could save you some trouble—let's settle this,'" Mr. Go said. "It's something North Korea can definitely put on the table."

North Korea counts neighboring Russia and China as among its closest allies. In recent weeks, the Kim regime reopened its borders to allow in a handful of cargo-train shipments inbound from China. Beijing and Moscow have recently blocked Washington's move to impose extra United Nations sanctions on the Kim regime and have previously advocated for the world to relax the economic restrictions.

—Chieko Tsuneoka in Tokyo contributed this article.



Immigration data show that nearly 69,000 more Hong Kong residents have left the city than arrived this year.

Curbs Spark Hong Kong Exodus

By FRANCES YOON AND DAN STRUMPF

HONG KONG—For Charles Murton, one of Hong Kong's tens of thousands of expatriate residents, the city's surprise decision to shut schools in March to test its 7.4 million people for Covid-19 was the last straw.

He has been drawing up plans to leave the city he immigrated to as a teenager, looking at a move with his wife and two young children to Singapore, a perennial Hong Kong rival that continues to open its borders even as Covid-19 numbers there surge to records.

"The virus is something that you've got to live with, but that doesn't seem to be the thought process here," said Mr. Murton, a 41-year-old logistics executive.

For two years, Hong Kong largely shut out Covid-19 by at times banning travelers from certain high-risk countries, using lengthy quarantines for arrivals and social distancing, and isolating infected people and their close contacts—at the cost of effectively cutting off the global financial hub's residents from the outside world. Now, after the Omicron variant punctured the city's

defenses, overwhelming hospitals and testing facilities, the city is tightening the screws in new and unpredictable ways to adhere to Beijing's zero-Covid policy of stamping out the virus whenever it appears.

For residents frustrated by the lack of a clear pathway out of Hong Kong's restrictions, the latest clampdown clashes with the picture in the U.S., Europe and other parts of the world, where governments are dismantling the most intrusive pandemic-control measures.

Hong Kong's heavy-handed response risks turning what has been a stream of residents leaving the city into a flood. Immigration data shows nearly 69,000 more Hong Kong residents have left the city than arrived this year, with almost 80% of those leaving in February, marking the biggest monthly drain since January 2020, when the data began. The latest government figures available show the city's population shrank by more than 75,000 in mid-2021 from a year earlier.

The city's residents contend with a pandemic-control arsenal with few parallels in the West. Most nonresidents are barred from entering, and re-

turning travelers must pay for weeklong hotel quarantines no matter their test results or vaccination status. While other economies are ditching restrictions, Hong Kong has banned gatherings of more than two people and indoor dining after 6 p.m., and shut gyms, bars, hair salons and even campsites. Starting last Thursday, the unvaccinated

The screws are being tightened against Covid-19 in new and unpredictable ways.

can no longer shop in supermarkets and malls.

Despite these measures, the city has recorded more than 126,000 cases since Dec. 31 through Saturday, about 10 times the number of infections seen in 2020 and 2021 combined.

Under pressure from Beijing to end the outbreak, Hong Kong leader Carrie Lam announced plans to test all the city's residents three times in

March, adopting a tactic that has proved effective on the mainland in identifying every carrier of the virus in a given area and putting them in isolation or hospitals.

The government said it needs the school campuses to process the one million tests a day required to achieve that goal. Still, the decision brings forward the summer holiday, wrecking the travel plans of families and creating uncertainty over university-entrance exams for final-year students.

City authorities will also commandeer hotels and empty apartment blocks and build isolation centers to house the tens of thousands of people who are expected to test positive in the mass screening campaign.

Doris Chiu, who runs a travel agency, said the risks of being forced into isolation pushed her to accelerate plans to move with her 4-year-old daughter to Washington, D.C.

The Hong Kong native said she had lost faith in the government's ability to manage the pandemic. "It's going to be a mess," she said. "It's going to kill the economy further because they've pretty much [brought] everything to a standstill."

Omicron Forces South Korea to Change Way It Tracks Covid-19

For much of the past two years, Lim Hyeon-jeong and her 10 contact-tracing colleagues in the South Korean city of Daegu gave themselves a nickname: Zombies.

By Dasl Yoon in Daegu, South Korea, and Alice Uribe in Sydney

They skipped meals, power napped at their desks, and sprinted to any restaurant, bar or church that reported a Covid-19 case—at all hours. Any slip-up, Ms. Lim believed, could ignite a nationwide outbreak that could puncture South Korea's stellar record against the infectious disease.

Now Omicron is here and Ms. Lim—like contact tracers around the world—is doing less, despite confronting more cases than ever before.

Daegu now reports thousands of cases a day—more than it had combined during the first year and a half of the pandemic. Yet Ms. Lim is no longer trying to halt outbreaks in their tracks by poring through security-camera footage, credit-card records and phone GPS records.

Instead, she tracks confirmed cases at nursing

homes. She goes home at 6 p.m. most nights.

At her City Hall office, Ms. Lim sits at a desk beneath a banner that reads, "Daegu Omicron Response Headquarters." But she often finds herself wondering: "Can I really stop tracking these cases?"

South Korea is among the countries undergoing a major pivot in how they combat Covid-19. The old tactics no longer work as well at containing the more contagious Omicron variant. Health officials have pointed to relatively low levels of death and hospitalization, plus high vaccination rates, as grounds to accept larger outbreaks.

Singapore recently shifted mainly to automated detection for contact tracing that uses a Bluetooth tracking app to identify and send text messages to close contacts of Covid patients when outbreaks occur. The U.K. ended contact tracing this week, following moves to scale back in Denmark, Finland and parts of Germany. In the U.S., several states are reducing contact-tracing staff.

Contact tracers, who had until recently been on the front lines, feel the transition acutely. Tracking who, where



Lim Hyeon-jeong works under a banner reading 'Daegu City Omicron Response Headquarters.'

and how the virus had spread would require a massive staffing boost to keep pace, health officials say, though such investment looks less necessary given Omicron's milder effects on much of the population.

The number of daily confirmed cases per million people in South Korea, Australia and Singapore now surpasses

that of the U.S. and U.K., according to Our World in Data.

"Contact tracing became nearly impossible due to Omicron," said Kim Dong-hyun, a professor of epidemiology at South Korea's Hallym University College of Medicine. "But countries have let their guard down without knowing whether another variant could emerge."

Rebecca Hundy, an Australian contact tracer, finds herself and her team spending more time providing health advice, after officials decided to stop tracking every case. Their limited investigations target high-risk areas, such as prisons or aged-care facilities. For most other Covid cases, location tracking is now done

through online surveys sent in automated text messages.

"We've basically told people, 'You are almost doing contact tracing yourself in a way,'" said Ms. Hundy, who heads contact-tracing investigations in the Canberra region.

Few countries had bet bigger on contact tracing than South Korea. But the highly contagious Omicron overwhelmed what had been a calibrated approach to limiting outbreaks through widespread testing and case investigations.

Most South Koreans with Covid now isolate themselves at home without ever communicating with health investigators.

Two years ago, Daegu was the epicenter of the first major Covid outbreak outside China. Back then, Ms. Lim was one of just two contact tracers on staff. Her phone rang throughout the night.

But on a recent day, it was almost silent. She is now in reaction mode, waiting for outbreaks to be reported at nursing homes.

"We used to say that zombies lived on the 10th floor," she said. "But it's been too long since I've had an evening to myself."

WORLD WATCH

NEPAL

Parliament Clears U.S. Aid Program

Nepal's Parliament approved a \$500 million U.S. government aid program Sunday despite objections from China and protesters from locals who say it could undermine the Himalayan nation's sovereignty and fuel a tussle for influence there between Wash-

ington and Beijing.

A majority approved by voice vote the implementation of the Millennium Challenge Compact, signed between Nepal and the U.S. in September 2017, said Agni Prasad Sapkota, the speaker of Nepal's Parliament.

The funds would be used to improve availability of the electric supply and to maintain road quality.

—Krishna Pokharel

CHINA

Coal-Mine Collapse Traps 14 Workers

A rescue operation was under way to reach 14 workers trapped in a coal mine in southwestern China, state-run media said on Sunday.

The roof of a shaft at Sanhe Shunxun coal mine in Guizhou province collapsed Friday morning,

the state-run China Daily said.

The roof caved in about 19 miles from the entrance, and the collapsed area was large, complicating the effort. Rescuers were attempting to excavate alongside the mine's walls from the exit side.

China's coal mines are among the world's deadliest, suffering explosions and gas leaks despite repeated safety crackdowns.

—Associated Press

AFGHANISTAN

Taliban Sweep Arrests Dozens

The Taliban government said Taliban forces have arrested dozens of criminals, kidnappers and smugglers in operations across Kabul.

Taliban spokesman Zabiullah Mujahid said Saturday the aim was to collect weapons and ar-

rest suspects.

The operations garnered criticism amid reports of abuse suffered by civilians, including minority groups and women, at the hands of Taliban forces.

Mr. Mujahid also welcomed a recent U.S. decision to ease restrictions on Afghan banks. Billions of dollars of Afghan assets are frozen in U.S. banks, hampering state institutions.

—Associated Press

BUSINESS & FINANCE

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THE WALL STREET JOURNAL.

Monday, February 28, 2022 | B1

Last Week: S&P 4384.65 ▲0.82% S&P FIN ▼0.27% S&P IT ▲1.29% DJTRANS ▲1.58% WSJ IDX ▲0.30% 2-YR. TREAS. yield 1.584% NIKKEI 26476.50 ▼2.38% See more at WSJ.com/Markets

Market Playbook Is Upended

Stock, commodities prices record some of the most extreme swings in decades

By GUNJAN BANERJI

Global markets for everything from stocks to oil to wheat are recording some of the most extreme price swings in decades, a sign of investor unease over unpredictable economic and political dynamics.

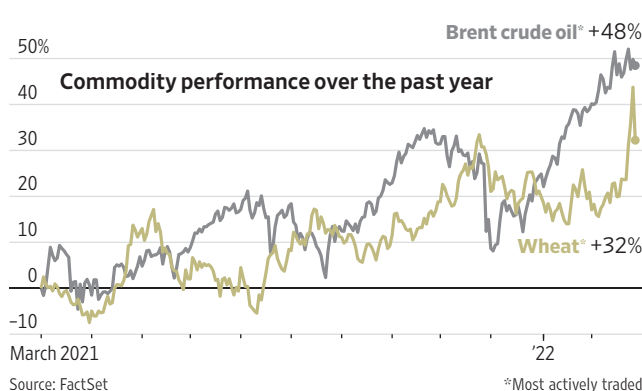
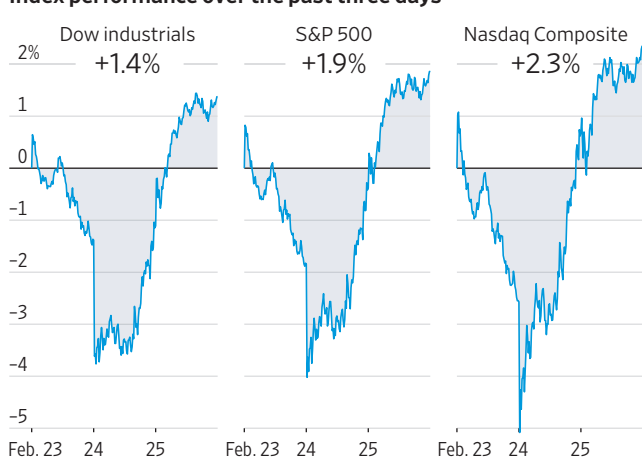
After months of turmoil driven by the prospect of tighter Federal Reserve policy, investors this past week confronted a fresh challenge when Russia invaded Ukraine. The geopolitical crisis threatens to crimp economic growth in Europe at a time inflation is at a 40-year high and the Fed is poised to raise interest rates for the first time since 2018.

The S&P 500 suffered its first correction—a drop of more than 10% from a recent high—in two years, while Russian stocks recorded a historic crash, dropping by a third. Oil prices crossed \$100 for the first time since 2014, and wheat hit the highest level since 2012. Commodities like nickel and aluminum soared as well.

The attack is “creating chaos in the financial markets,” said Ilya Feygin, a managing director at New York-based brokerage firm WallachBeth Capital.

Yet as U.S. stock indexes

Index performance over the past three days



Source: FactSet

touched their lows of the week Thursday morning, a familiar pattern began to reassert itself. Many investors jumped back into the market, scooping up shares of the growth and speculative stocks that fell out of favor this year. Oil and other commodity prices eased off their highs. By the time Friday's closing bell rang, the

technology-focused Nasdaq Composite and the broader S&P 500 were up for the week. The S&P 500 eked out a 0.8% gain after falling as much as 5.4% during the week, the biggest weekly comeback since September 2008.

On Sunday evening, stock futures fell as investors grappled with geopolitical develop-

ments including new sanctions by Western countries against Russia. Futures for the S&P 500 dropped 2.6%, while futures for the Nasdaq-100 index declined 2.7%.

In Japan, the Nikkei 225 was 0.3% lower, and the CSI 300, which comprises the largest stocks listed in Shanghai and Shenzhen, was down 0.6%. Hong Kong's Hang Seng was down 1.4%, on track for its lowest close since 2020. Futures for the Russian ruble declined 19%, suggesting the currency would trade at about 109 rubles to the dollar. Most actively traded gold futures rose 1.2% to \$1,910 a troy ounce, while the WSJ Dollar Index added 0.6% to 90.55.

Last week's U-turn emphasizes that many investors are loath to dump the trades that boomed over the past two years, and it highlights a dilemma they now face. They can opt to stick with investments in slower-growing companies that appear likely to weather what could be a bruising interest-rate cycle. Or, they can return to the pandemic-era winners whose returns exceeded all expectations and that continue to prosper at times, despite concerns about valuations and fundamentals.

Even in light of the impressive comeback in the second half of the week, some stark facts remain. The Nasdaq is down 12% in 2022; the S&P 500 is off 8%. Investors continue to

Please turn to page B2

Technology Industry Switches to Cash From Stock Awards

By THEO FRANCIS AND TRIPP MICKLE

After years of enticing employees with large stock awards and surging share prices, some technology companies are deploying a time-tested tool: cash.

Alphabet Inc., which owns Google, adopted a new cash bonus plan in October that lets the company give employees bonuses of nearly any size for nearly any reason. Amazon.com Inc. said this month it doubled its cash-pay cap for employees. Some cryptocurrency and nonfungible-token startups are offering pay packages with larger cash components than long-established tech companies in the hunt for workers, according to some tech recruiters.

Employers' recent changes to compensation have been fueled by a desire to blunt attrition amid labor-market upheaval caused by employees reevaluating their careers after two years spent working from home, recruiters and compensation consultants said. Inflation and the stock market's volatility have also led staff to reevaluate their appetite for risk and preference for cash.

Tech companies have long competed to siphon engineering and software programming

talent from universities and smaller companies. These companies are increasingly attempting to hire away one another's top employees. For example, Meta Platforms Inc., the parent of Facebook, has increased efforts to hire experienced staff in alternate-reality tech, adding pressure on rivals to increase pay.

Engineers are frequently telling their bosses that they are exploring their options or have received an offer to work elsewhere, said Sherveen Mashayekhi, chief executive officer of Free Agency, a firm that advises tech employees on career transitions.

“Bosses who usually leave this to HR or recruiters are panicked, saying, ‘A lot of my team is in a job search,’” Mr. Mashayekhi said.

As cash compensation looms larger, some companies are increasing the size of merit-raise pools to 4% of payroll from a typical level of 3%, said Robin Ferracone, founder of compensation consulting firm Farient Advisors.

A 2017 tax-law change could also lead companies to broaden their bonus plans, dropping performance criteria that no longer bring the tax breaks they used to, said Steven Hall,

Please turn to page B4

Investors Bet Oil Has Room to Run

By AMRITH RAMKUMAR

On Wall Street, there is a bet that \$100 oil is just the beginning.

Crude prices swung sharply and eclipsed \$100 a barrel last week for the first time in about eight years after Russian airstrikes hit Ukraine and threatened to disrupt the movement of oil and other materials from the region.

The advance builds on a historic rebound for commodities following the onset of the Covid-19 pandemic two years ago but also adds pressure on a global economy grappling with surging inflation.

Although the supply shock is expected to lead to an increase in gasoline prices at the pump, traders aren't betting on a slowdown in demand and say they are positioning for the bull market in commodities to carry on.

Brent crude, the global gauge of oil prices, ended the week at \$97.93 a barrel, bringing its climb over the past year to nearly 50%. U.S. crude settled at \$91.59. Both gauges topped \$100 on Thursday for

the first time since 2014 before pulling back.

On Sunday evening, Brent jumped 4.4% to \$98.30 a barrel following a decision by Western nations to eject some of Russia's banks from the global financial system's payments infrastructure, Swift. Some analysts think such measures will make it harder for Russian energy companies and traders to access the financing they need to produce and move crude. U.S. crude futures rallied 4.9%.

“The speed of the moves is actually what scares me the most,” said Rebecca Babin, senior energy trader at CIBC Private Wealth, U.S. She expects oil to soar if even more punitive measures are imposed on Russian energy companies and banks. The current sanctions still allow payments for Russian energy exports to continue through some unsanctioned financial firms.

Investors have put almost \$3.5 billion into broad commodity funds such as Invesco DB Commodity Index Tracking Fund this year, the largest such inflow to start a year

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Railroads, Energy Lift Berkshire

By JUSTIN BAER

A growing economy propelled Berkshire Hathaway Inc.'s railroad, energy and consumer businesses, pushing net earnings up 11% in the fourth quarter.

In addition, a powerful stock market nearly doubled the conglomerate's investment gains for the full year.

Warren Buffett's company reported \$90 billion in net earnings for 2021, a record, thanks in part to its stock portfolio. Berkshire owns 5.6% of Apple Inc., a stake valued at \$161.2 billion at year-end—up more than \$40 billion from the year before.

Mr. Buffett, who has admonished his investors to pay little heed to investment gains, called the Apple investment one of Berkshire's “four giants” in his annual letter to shareholders, noting the stake's year-end market value exceeded that of all of the company's other holdings save its insurance operations.

Operating earnings, which exclude some investment results, jumped 45% to \$7.29 billion in the quarter from \$5 billion a year earlier.

The Apple stake is “an acknowledgment of another pil-



Warren Buffett's company reported \$90 billion in net earnings for 2021, a record amount.

lar of growth at Berkshire,” said Cathy Siefert, an analyst with CFRA Research. “Tech is now an important part of Berkshire. Who'd have think it?”

Bill Smead, whose money-management firm owns Berkshire shares, said he is concerned that acknowledgment was a sign the conglomerate will hold its Apple stake for too long—as it had with its

Coca-Cola Co. shares.

“The law of large numbers starts to get in the way,” he said. “Who's left to buy the stock? Apple is a wonderful company. Coca-Cola is wonderful. It just got too big and was overowned.”

Mr. Buffett's letter celebrated Berkshire's railroad (“the number one artery of American commerce”) and the green credentials (“the com-

pany has long been making climate-conscious moves”) of its energy division, which invests in renewables but also operates coal-fired power plants.

Mr. Buffett also reminded shareholders of Berkshire's large tax bill (the “invisible and often unrecognized financial partnership between government and American businesses.”) He wrote that

Please turn to page B2

Discovery Plans to Name Chris Licht to Run CNN

By JOE FLINT AND BENJAMIN MULLIN

Discovery Inc. tapped producer Chris Licht to lead CNN after it takes over the cable-news channel, according to people familiar with the matter, turning to a veteran news and late-night TV showrunner to steady a network roiled by the departure of its long-serving president.

An announcement of Mr. Licht's appointment as CNN president is expected next week, some of the people said. Mr. Licht isn't expected to start at the network until after the completion of the merger of CNN parent WarnerMedia and Discovery, which is expected to happen in the second quarter.

Mr. Licht, who is executive producer of “The Late Show With Stephen Colbert” on



Chris Licht

Paramount Global's CBS network, was also the executive producer of “CBS This Morning” as well as MSNBC's “Morning Joe.”

The pending appointment

of Mr. Licht comes during a pivotal period for CNN, which is grappling with declining ratings and is preparing to jump into the streaming wars with a new subscription service, CNN+, as the Discovery deal nears its close. The network is reeling from the recent departures of CNN President Jeff Zucker, Chief Marketing Officer Allison Golust and prime-time anchor Chris Cuomo.

Mr. Licht will have a smaller role than Mr. Zucker, who beyond his role as CNN president also oversaw sports for WarnerMedia, some of the people said. When he starts, Mr. Licht will have latitude to make significant changes at CNN, including its business strategy, programming and digital offerings, one of the people said. One area of focus

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INSIDE



TECHNOLOGY
U.S. government funds battery startup Ion Storage Systems. B4



HEARD ON THE STREET
Zoom needs to increase spending on sales and research. B9

Wall Street Takes Lead In Crypto Trading

By PAUL VIGNA

Professional investors have been surging into crypto at record rates.

Institutional clients traded \$1.14 trillion worth of cryptocurrencies on exchange Coinbase Global Inc. in 2021, up from just \$120 billion the year before, and more than twice the \$535 billion for retail.

Retail traders comprised bitcoin's market in the early years and traded on exchanges that offered a single bet: buy or sell bitcoin, 24 hours a day, seven days a week. That resulted in a small, erratic market that could be easily moved by modestly sized trades.

“It's a completely different game now than it was,” said Leah Wald, the chief executive of Valkyrie Funds, which sells crypto-focused exchange-traded funds.

Those retail investors are still there, but they have been

joined by hedge funds, registered investment advisers and some companies, said Gil Luria, a strategist at D.A. Davidson who has been studying bitcoin since its early days. Even El Salvador has become a buyer. “They're all new,” he said.

The growth in professional investors underscores the rapid mainstreaming of cryptocurrencies in recent years. Venture funds invested billions in cryptocurrencies in 2021—and crypto exchanges have amped up their marketing dollars to try to become household names.

A survey of 300 institutional investors conducted by State Street in October found that more than 80% were now allowed to have exposure to cryptocurrencies. Large funds with assets of \$500 billion or more under management were the most bullish, and nearly two-thirds of them had dedicated

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INDEX TO BUSINESSES

These indexes cite notable references to most parent companies and businesspeople in today's edition. Articles on regional page inserts aren't cited in these indexes.

INDEX TO BUSINESSES grid with columns A, B, C, D, E-F, G, H, I, J, L, M, N, P and corresponding company names like Alphabet, Amazon, Apple, etc.

INDEX TO PEOPLE

INDEX TO PEOPLE grid with columns A, D, F, G, H, K, L-M, Y and corresponding names like Allan, Atkinson, Babinec, etc.

Berkshire Earnings Increase

Continued from page B1 Berkshire pays the Treasury about \$9 million a day in income taxes. Those tax payments reflect the company's steady growth over many decades—a successful run, Mr. Buffett wrote, made possible by Berkshire's home in the U.S. Berkshire's fourth-quarter net earnings attributed to shareholders rose to \$39.65 billion, or \$26,690 per Class A share equivalent, from \$35.84 billion, or \$23,015 a share, a year earlier. On an operating basis, Berkshire earned \$3.27 a Class B share equivalent in the fourth quarter, analysts said. That beat analysts' average estimate of \$2.95 a share, according to S&P Global Market Intelligence. For the full year, Berkshire reported \$89.80 billion in net earnings attributable to shareholders, of which \$62.34 billion were investment gains. In 2020, investment gains were \$31.59 billion. Berkshire's railroad, Burlington Northern Santa Fe, reported record earnings in 2021. BNSF's trains carried 535 million tons of cargo last year, more than any other carrier, Mr. Buffett wrote. Berkshire said BNSF's operating revenue from consumer products—the largest category of freight it carries—rose 13.7% in 2021. It attributed the growth to higher retail sales and e-commerce sales. Berkshire also owns industrial manufacturers, retailers and auto dealerships. Many of those businesses posted higher revenue last year, reflecting the economy's broad recovery from Covid-19 disruption. "It's an all-in bet on the U.S. economy," Mr. Smead said. "The operating performance was really terrific." Take Nebraska Furniture Mart, the home-furnishings retailer Berkshire controls, Mr. Smead said. "Think of how

well they did with people buying homes who had never bought homes before," he said. An accounting-rule change in recent years has meant that Berkshire's earnings often reflect the larger performance of the stock market, while Mr. Buffett has said operating earnings more accurately reflect business operations. The S&P 500 rose 27% in 2021, the index's third consecutive year of double-digit growth. On a total return basis, which includes dividends, the benchmark notched a 28.7% gain. Berkshire's stock edged it out, with an annualized total return of 29%. Berkshire's Class A shares closed Friday at \$479,345, up 5.5% for the year. Class B shares, which have risen 6.1% in 2022, closed at \$319.24 on Friday. The company produced annualized gains of 20% from 1965 to 2020, outperforming the S&P 500's 10.2% gains, including dividends. In recent years, Berkshire's performance has slipped. The company's annualized total returns over the past five years were about 13%, compared with 18% for the S&P 500. Berkshire made no big acquisitions in 2021, though the company remains an active buyer of its own stock. Berkshire spent \$51.7 billion on repurchases in the past two years, Mr. Buffett wrote in his annual letter to shareholders. "Periodically, as alternative paths become unattractive, repurchases make good sense for Berkshire's owners," Mr. Buffett wrote. Berkshire spent \$6.9 billion on repurchases during the fourth quarter. As of Feb. 23, Mr. Buffett wrote, Berkshire had spent an additional \$1.2 billion on buybacks in 2022. The company ended 2021 with \$146.7 billion in cash, cash equivalents and short-term Treasury bills.

\$6.9B Amount of stock repurchases during the fourth quarter



Warren Buffett's company got a lift from railway holdings.

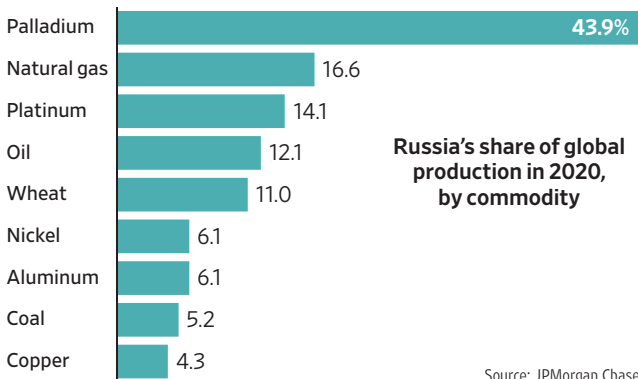
Investors Bet Oil Can Rise More

Continued from page B1 since the funds proliferated in the last decade, FactSet data show. The funds have taken in more than \$10 billion in the past 12 months. Traders are also buying shares of energy producers to wager on higher prices and increasing bullish bets on oil futures and options. Futures oblige the holder to buy an asset at a specific price on a future date, while options give the owner the right to do so but not the obligation. Net bullish bets on oil by hedge funds and other speculative investors have climbed lately as well, according to the Commodity Futures Trading Commission. The ratio of bullish wagers to bearish ones recently hit 15 to 1, its highest point since last summer. Some bullish traders were wagering on much higher prices well before Russia's invasion, pointing to the world's dwindling ability to increase production. Capacity has dropped in recent years with companies coming under pressure to limit spending and carbon emissions. A retreat from the industry by large financiers has also squeezed producers. Bulls say that those trends and dwindling inventories set up conditions for haywire

BUSINESS & FINANCE



Brent crude-oil prices have risen nearly 50% in past year.



price moves that could be exacerbated by a prolonged military conflict. "It's set up for prices to go crazy," said Josh Young, chief investment officer at Houston-based Bison Interests. He has been betting on higher oil prices by buying shares of producers in the U.S. and Canada such as Journey Energy Inc. Shares of energy companies have been the stock market's best performers recently after years of lagging behind. The S&P 500 energy sector is up

23% this year. The broad index has fallen 8%. Some investors like Mr. Young say oil could approach its 2008 record near \$150 due to global supply limitations. Consulting firm Rystad Energy said oil could trade around \$130 if the situation in Ukraine worsens, while JPMorgan Chase & Co. analysts said crude could hit \$120. Some of the most popular options bets for U.S. crude recently have been bullish calls tied to prices hitting \$101 or

Market Playbook Is Upended

Continued from page B1 expect the Fed to raise rates starting in March—a process that is likely to be painful for some highly valued investments. This week, investors will be looking at the monthly jobs report and earnings from companies like BJs Wholesale Club Holdings Inc. and Domino's Pizza Inc. to gauge the market's trajectory. Several investors said they are questioning whether major indexes have fallen too far, too fast and whether the trades that soured over the past two months are bound for a comeback. By one measure, valuations for S&P 500 stocks fell below their five-year average for the first time since 2020, according to FactSet. "Investors are looking at equity-market valuations and starting to reassess, particularly bottomed-out areas of the markets," said Erik Knutzen, multiasset class chief investment officer at Neuberger Ber-man. Some of the stocks that had declined the most this year led the rally to end the week. Stocks within the Russell 3000 that had performed the worst in 2022 bounced the most on Thursday, gaining around 7%, according to Bespoke Investment Group analysts. Some of the most speculative corners of the market notched big gains, too. Shares of Cathie Wood's flagship fund, the ARK Innovation ETF, added 4.7% for the week. The S&P 500's technology sector outperformed the broader market, and shares of some growth companies bounced back. Individual and institutional investors jumped into the market. Of the \$3.6 billion that investors poured into U.S. equity ETFs this week, around a fifth went to ProShares UltraPro QQQ, which provides turbo-charged exposure to the Nasdaq, FactSet data through Thursday show. David Giroux, portfolio manager at T. Rowe Price, said he has already sold shares of energy companies in his portfolio—which have outperformed this year—while buying tech stocks like Nvidia Corp., Apple Inc. and Amazon.com Inc. He expects oil prices to fall and inflation to moderate over the coming year while economic growth slows down, helping tech stocks. He predicted major indexes can still notch gains for the year, recovering their steep losses. "We have really fundamentally changed" our portfolio, Mr. Giroux said. "A year ago you would've seen a big bet on value [stocks]. Now everybody loves that stuff—we've been

selling that hand over fist." Adding fuel to the bets, traders started to price in a lower chance of a half-percentage-point increase in interest rates in March, with some banking on geopolitical tensions to soften the Fed's action. The volatility has tested investors after a long period of calm. Following a sharp, swift fall into a bear market in early 2020, stocks primarily went up for most of the next two years, kicking off 2022 at highs. The recent selloff—with the S&P 500 down 8.6% from its

highs—has lasted 37 trading days, compared with the 23 trading days it took for the gauge to bottom in early 2020, according to Dow Jones Market Data. Many warn that the swings may be far from over. The outcome of the war between Russia and Ukraine is unclear, and many investors remain on edge about rising interest rates. Though stock valuations have fallen, they remain above historical levels. Under the stock market's surface, the turmoil is more ap-

\$140 a barrel, according to data provider QuikStrike. Ahead of Thursday's rally, traders for months had piled into options wagers linked to oil touching \$100. In another bullish signal, futures tied to oil that would be delivered sooner are now more expensive than prices linked to contracts that expire several months from now, a condition known as backwardation. It indicates traders expect markets to be undersupplied and encourages investment in commodities because traders who sell pricier near-term contracts before they expire and buy cheaper contracts tied to future months can profit. Many traders turn to the oil market when they expect high inflation or a geopolitical crisis to pinch the economy, sometimes leading crude and stocks to trade in opposite directions. As traders dialed back bets on punitive sanctions and energy-supply disruptions late in the week, oil pared its gains and stocks rose. The Biden administration has said it is considering releasing domestic strategic oil stockpiles to ease pressure on consumers at the pump. A U.S. return to the Iran nuclear deal and the removal of sanctions on Iran are other steps that would bring some oil back to the global market. —Gunjan Banerji contributed to this article.



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BUSINESS NEWS

Walmart Revamps Delivery Options

Retailer hopes new services and supply-chain investments will boost online orders

By Sarah Nassauer

Walmart Inc. wants to keep the e-commerce party going.

The retailer is focused on adding new ways to offer shoppers home delivery and efficiently move online inventory as the pandemic-related e-commerce surge shows signs of cooling.

Walmart is building more automated fulfillment centers attached to existing stores, experimenting with autonomous trucks, using its own workers to make deliveries and expand a service where staffers leave packages inside homes.

Executives aim to keep the retailer growing as a host of competitors—from Amazon.com Inc. to tiny but well-funded startups—speed up delivery times and compete for shoppers.

“When customers realize they need an item, do they think of Walmart first?” said Tom Ward, a longtime Walmart executive who was recently named the head of its U.S. e-commerce operations. “The reason they do or they should is we built these things.”

E-commerce sales surged during the pandemic as people avoided shopping in physical stores and clamored for hard-to-find items such as toilet paper and home goods. But growth slowed in recent months as shoppers increasingly return to physical stores. Amazon, the country’s largest online retailer, said sales for its online stores fell 1% in the most recent quarter, compared with the year-earlier period. Walmart said U.S. e-commerce sales rose 1% year-over-year in the quarter ended Jan. 28, compared with 69% growth a year earlier.

When the pandemic hit, Walmart accelerated some of its plans to grow online, executives said. “There was a plan, an investment plan, a growth plan, but Covid kind of changed the pace of that,” said

Chris Nicholas, chief operating officer of Walmart U.S.

In 2020, Walmart rolled out a two-hour home delivery service it dubbed Express Delivery. Pre-pandemic it offered delivery in prescheduled slots, usually a day or two away from the time an order was placed. Third-party companies such as DoorDash Inc. make many of these deliveries for Walmart. Last year, Walmart increased its delivery capacity by almost 20% and plans to increase it by about 35% this year, said a spokeswoman.

Express Delivery is available from more than 3,400 of Walmart’s 4,700 U.S. stores for an additional \$10 fee. Walmart executives see it as a helpful service when something is needed fast, not the primary way people stock up on groceries. Walmart declined to say how many people had used the service.

Walmart shifted gears early in the pandemic by using thousands of stores as e-commerce fulfillment hubs to speed up delivery times. Previously, Walmart favored using warehouses to fulfill most e-commerce orders.

Now Walmart wants to build a bigger, more flexible network and make the delivery system a product that can be sold as a service to smaller retailers, executives said.

The effort started when executives mapped out a plan to reformat the retailer’s back end technology to enable growth through the online pickup service, then delivery, said Srinivas Venkatesan, recently named head of Walmart’s omni-channel tech efforts. The pandemic sped things along, but “this is something we have been thinking about for three or four years,” he said.

Walmart is building around 100 automated small fulfillment centers attached to existing stores in the next few years, the executives said. Those systems store and move the mostly commonly purchased items online with a system of mechanical shuttles moving along scaffolded tracks, batching orders together for pickup. That helps Walmart fulfill more orders, faster to meet demand, with-

out clogging store aisles with workers picking online orders, said the executives.

Walmart is building out a service dubbed Spark that lets contract workers shop for or deliver an online order, similar to Instacart. Walmart hopes it can use that service to offer delivery even during demand spikes such as those during the pandemic, executives said.

Some ideas are less advanced. It is testing autonomous delivery vans that shuffle products short distances on two routes, one near Walmart’s headquarters in Bentonville, Ark., and another in New Orleans. The vehicles travel between a small grocery warehouse and a store where orders are picked up by shop-



One of the company’s distribution facilities in Bentonville, Ark.

pers or by delivery workers.

A key piece of Walmart’s plan is a service that brings orders inside a shopper’s home or refrigerator called In-Home Delivery. The service will be available to around 30

million homes by the end of this year for members paying \$148 annually.

The workers who make deliveries are part of a small team that become familiar to customers, said Walmart executives, have been with Wal-

mart for at least a year, undergo a background check and wear body cameras during deliveries. The delivery workers will also pick up returns at homes.

WHERE RISK MEETS OPPORTUNITY

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STRATEGY

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POSITION

Blackstone CEO Gets a Windfall

By Miriam Gottfried

Blackstone Inc. Chief Executive Officer Stephen Schwarzman took home a record \$1.1 billion in 2021, underscoring the private-equity giant’s growing dominance on Wall Street.

Dividends on his 19% stake in Blackstone accounted for the biggest chunk of Mr. Schwarzman’s haul, totaling \$941.6 million for the year. He also earned \$160.3 million in compensation from profit tied to investment performance and a base salary of \$350,000, according to a regulatory filing late Friday.

The eye-popping figures, the biggest ever for Mr. Schwarzman, make him one of the highest-paid executives on Wall Street—if not the highest. They are a reflection of how pivotal the past year has been for Blackstone’s business. The firm’s 2021 financial performance broke records by nearly every key measure, with assets under management reaching \$880.9 billion by the end of the fourth quarter, as initiatives to reach wealthy individuals and expand its base of insurance clients helped Blackstone further access big new pools of capital.

Including dividends, Blackstone shares have more than doubled since the beginning of 2021 versus a 19% total return for the S&P 500. The firm’s market capitalization now stands at \$155 billion, more than four times that of Apollo Global Management Inc.—its closest private-equity peer—and well beyond that of Wall Street heavyweight Goldman Sachs Group Inc.

Like its peers, Blackstone took the step in 2019 of converting from a publicly traded partnership to a corporation, a move that has helped propel its



CEO Stephen Schwarzman

performance as more investors own the stock. But the firm has maintained a supervoting share structure even as rivals have abandoned theirs in favor of a one-share, one-vote model. Mr. Schwarzman owns preferred shares that give him substantial control over certain aspects of the business.

Mr. Schwarzman, 75 years old, co-founded Blackstone in 1985 and is valued at an estimated \$37.3 billion, according to Forbes. While he continues to serve as its CEO, he has delegated much of the day-to-day responsibility of running the firm to Blackstone President Jonathan Gray.

Shares of Blackstone, including dividends, have more than quadrupled since 2018 when Mr. Gray assumed the role from his predecessor, Hamilton “Tony” James. That compares with a 65% total return for the S&P.

Mr. Gray took home \$323.8 million in 2021, including \$167.2 million in dividends and \$156.6 million in investment-gain and other compensation.

Neither he nor Mr. Schwarzman received a cash bonus.

 CME Group

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Sarah Kemp
LPGA Player

TECHNOLOGY & MEDIA

WSJ.com/Tech



A demonstration in an Ion Storage lab of how its battery is resistant to catching fire as it is held before a flame.

U.S. Backs Battery Startup

Grant to Ion Storage aims to foster device that lasts long, resists fire and charges faster

By Scott Patterson

BELTSVILLE, Md.—The U.S. is far behind its global rivals in the race for energy supremacy in a low-carbon world. To catch up, it is pinning its hopes on companies such as **Ion Storage Systems**, a next-generation battery company started in a University of Maryland chemistry lab with a \$574,275 federal grant.

At a new factory outside of Washington, D.C., Ion Storage will be among the first companies in the U.S. to produce a new kind of faster-charging, longer-lasting battery. The company's batteries also don't catch fire; combustibility is a problem that has bedeviled the industry's batteries for years.

The U.S. government and private investors have poured cash into battery startups hoping to catch up to the Chinese, Japanese and South Korean companies that dominate battery manufacturing. The goal is to leapfrog their rivals with better technology.

There is an urgency for U.S. battery makers to get products to market because big customers such as auto makers are lining up long-term suppliers. If there are no U.S. options, the buyers will go abroad. "This is our last chance to get it right" in the U.S., said Ricky

Hanna, Ion Storage's chief executive and the former executive director of battery operations at **Apple Inc.**

Ion Storage plans to begin producing batteries later this year. The company has a contract to develop batteries for the U.S. Army, and it is working on battery development with defense giant **Lockheed Martin Corp.** Company officials say they are in talks with five auto makers regarding batteries for electric vehicles.

The company is one of several startups focusing on solid-state lithium-ion batteries. These batteries differ from most lithium-ion batteries today because the electrolyte that conducts a charge between cathode and anode is solid, rather than a flammable liquid. That allows faster charging, less risk of fire and longer battery life. Ion Storage scientists demonstrate their batteries' durability by cutting them open with scissors or putting them before an open flame.

Now the company is pondering an initial public offering of stock in the next year or so, said Mr. Hanna, who helped oversee production of the batteries that power iPhones, iPads and other devices while he was at Apple.

The technology behind Ion Storage is the brainchild of Eric Wachsman, director of the Maryland Energy Innovation Institute at the University of Maryland. Mr. Wachsman first became interested in alternative energy in the 1980s, when he worked on batteries and fuel

cells at Stanford University.

Mr. Wachsman is a "top-notch, world-class scientist, especially in solid state" battery technology, said Susan Babinec, a leader of battery research and development at Argonne National Laboratory in Illinois. Ms. Babinec helped oversee Mr. Wachsman's battery projects for several years at the Energy Department's Advanced Research Projects Agency-E program, known as ARPA-E.

Ion Storage faces stiff competition in the U.S. and abroad. Silicon Valley solid-state startup **QuantumScape Corp.**,

that solid-state batteries will be able to compete with today's standardized lithium-ion power packs soon. A vast supply chain and manufacturing industry has been created to build those batteries, helping drive down costs some 90% in the past decade. Much of the production lines for certain solid-state batteries will need to be built from scratch or borrow methods used in other industries.

"There's still quite a long way toward commercializing any kind of solid-state technology, especially when it comes to electric vehicles," said Andrew Miller, chief operating officer at Benchmark Mineral Intelligence, which studies battery technologies and their supply chains. "These batteries haven't been proven at scale."

Ion Storage says it can compete on cost because its batteries don't need cobalt or nickel, which have surged in price during the past year amid booming demand for lithium-ion batteries used in electric vehicles. The company also says its devices require less lithium than standard rechargeable batteries. Lithium prices have surged more than 500% in the past year.

Skyrocketing demand for the minerals that make up electric-vehicle batteries threaten to end a decadelong decline in the cost of batteries. Electric-car sales hit 6.6 million in 2021, nearly 9% of the global car market and triple the number sold just two years earlier, according to the International Energy Agency.

500%

Approximate increase in lithium prices in the past year

which is backed by **Volkswagen AG**, went public in 2020 and briefly became more valuable than **Ford Motor Co.** **Toyota Motor Corp.**, the world's largest car maker, says it is working on solid-state batteries.

Other competitors include Colorado's **Solid Power Inc.**, which has had backing from Ford, **Hyundai Motor Co.** and **BMW AG.** Factorial Energy, a solid-state company based in Woburn, Mass., last month said it had raised \$200 million in a funding round led by **Mercedes-Benz Group AG** and Jeep maker **Stellantis NV.**

Some experts are skeptical

Companies Reward With Cash

Continued from page B1
managing director of compensation consulting firm Steven Hall & Partners.

Typically, tech companies pay junior to midlevel engineers equity that ranges in value from 30% to 100% of their salary, according to tech recruiters. Managers and senior-level staff can receive annual stock awards valued from two to six times their salary.

Some senior engineers are seeing compensation offers that are roughly a third higher than pre-pandemic levels—for example, a cash salary of \$250,000 with a \$50,000 signing bonus and an additional \$100,000 in restricted stock, recruiters said. Some companies are also halving the number of years required to be considered a senior engineer to roughly four or five years, giving younger workers a chance to increase earnings, they added.

For more than a decade, Google has paid junior engineers performance-based cash bonuses of 15% to 20% of their salary, while senior engineers were eligible for more than 25% of their salary, former employees said.

Alphabet's new cash bonus plan, effective Oct. 19, can be used to reward any employee who isn't eligible for sales bonuses, according to a securities filing. The plan lets the company calculate bonuses with different formulas.

Two earlier plans at Google, dating to 2006 and 2007, capped bonuses for individuals in at least some years at \$3 million and \$6 million, respectively, and gave the company discretion only to lower or eliminate awards. The same plans, which were designated

as bonus plans for executives or senior executives, also included company performance targets such as revenue, operating profit and total shareholder return.

Top executives at Google, including Alphabet Chief Executive Sundar Pichai, haven't received cash bonuses or incentive pay in recent years, the company's annual proxy statements show. The company last year reported paying Mr. Pichai \$2 million in salary and \$5.4 million in security benefits. In 2020, it paid him \$277 million in equity and \$65,000 in salary.

An Alphabet spokeswoman declined to comment on the change to its bonus plan but said the company pays salaries at the top of the market wherever it operates.

The flexibility Google sought for cash bonuses could speak to the changes being wrought by cryptocurrency startups, Mr. Mashayekhi said. Crypto companies have sought to lure several of his clients away from major tech companies by offering a third more in cash compensation. Other recruiters said venture-backed startups also have sweetened offers with richer cash payouts than established players.

Amazon said in an internal blog post this month that it would raise its cap on base pay—which most commonly consists of salary, paid in cash—to \$350,000 from \$160,000. It also said it would raise compensation ranges for most jobs, citing a "need to remain competitive for attracting and retaining top talent."

Amazon, which declined to comment on the move, relies on stock-based compensation to recruit and retain white-collar and management employees. The cap also means some new hires had to weigh a cut in salary to join the company and assess the prospects of gains in Amazon shares.

—Sebastian Herrera and Salvador Rodriguez contributed to this article.

Volatility has made stock-based compensation less attractive to retain talent.

Share performance over the past year



Source: FactSet

Wall Street Embraces Crypto

Continued from page B1
staff for the crypto market.

The only major institutional group that wasn't in the market, State Street found, was sovereign-wealth funds, though it predicted they would be within two years.

The growth of institutional investment has changed the way cryptocurrency markets behave. Now, digital markets have started to mirror traditional markets.

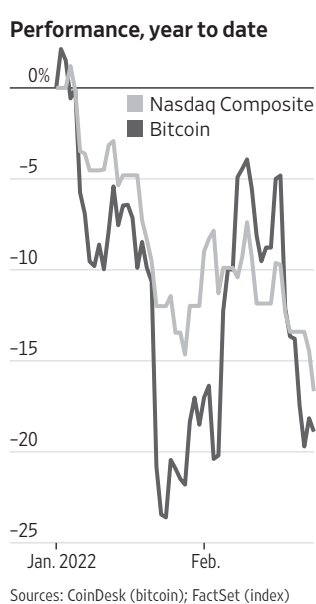
Professional traders see it as one asset inside a diversified portfolio, Mr. Luria said. They hold it because it promises outsize returns compared with

other assets, and they trade like any other risk asset.

That is why bitcoin has recently been trading largely in lockstep with tech stocks, said Lucas Outumuro, an analyst for research firm IntoTheBlock. The fear of rising rates and changing policy at the Fed is lowering the interest in risk assets, decreasing buyers in the market and boosting correlations. In January, bitcoin's correlation to the tech-dominated Nasdaq-100 was at its highest level since April 2020, he said.

The Nasdaq Composite Index is down 14% year to date, with investors concerned about inflation, interest rates, the economy and war in Ukraine. Bitcoin is down 18%.

The crypto market's offerings have grown to adapt to its new investors. There are myriad derivatives exchanges, and trading desks and automated services that allow investors to add leverage to



Sources: CoinDesk (bitcoin); FactSet (index)

their bets.

Investors in those kinds of financial products make up a majority of the dollar volume of trading. IntoTheBlock tracks transactions of more than \$100,000 as a proxy for these kinds of professional investors and firms. In the fourth quarter of 2021, those transactions represented 99% of total volume traded, the firm said.

Crypto hedge funds have proliferated in response to that demand. There are about 856 operating today with \$68 billion in assets under management, according to data from Crypto Fund Research, up from 31 managing less than \$1 billion at the end of 2016.

In fact, about the only thing that hasn't changed is bitcoin's volatility, said Nicholas Colas, the founder of research firm Data Trek. Usually, as assets grow in size and achieve critical mass, they become less volatile.

"That's not the case with bitcoin," he said. "It's just as volatile now as it was five years ago."

Licht to Be Named CNN Head

Continued from page B1
will likely be sizing up the network's mix of political coverage, investigative reporting and breaking news and deciding whether it needs to be changed, the person said.

The decision to hire Mr. Licht is one of the first major personnel moves made by Discovery ahead of its combination with WarnerMedia, currently a unit of AT&T Inc. Discovery Chief Executive David Zaslav, who will run the combined company—to be named Warner Bros.

Discovery—has said little publicly about Mr. Zaslav's plans for CNN but praised the network's coverage of the Russia-Ukraine war on a recent earnings conference call.

While Mr. Licht has strong producing chops, he has never run an enterprise as big as CNN, which has thousands of employees and operations that span the globe.

CNN is readying a paid subscription service, CNN+, which aims to give the network a beachhead in the video-streaming wars. CNN has spent big to lure prominent journalists, including former "Fox News Sunday" host Chris Wallace and Audie Cornish, the former co-host of NPR's "All Things Considered."

The service will include offerings from some of CNN's biggest anchors, including "State of the Union" co-host Jake Tapper, "The Situation Room" host Wolf Blitzer and

"Don Lemon Tonight" anchor Don Lemon.

CNN's ratings have fallen dramatically following the aftermath of the 2020 presidential election, and the network has struggled to recover against rivals MSNBC and Fox News.

The network's ratings tend to improve relative to competitors during major breaking news events such as the recent Russia-Ukraine war.

Mr. Licht is to take over CNN as one of its most important time slots, the 9 p.m. show previously hosted by Mr. Cuomo, has been without a designated host for months.

Mr. Licht never ran an enterprise as big as CNN, with thousands of employees.

Mr. Cuomo was fired in December amid an investigation into his efforts to help his brother, former New York Gov. Andrew Cuomo, respond to allegations of sexual misconduct. Andrew Cuomo, who resigned as governor in August, has denied that he touched anyone inappropriately.

A spokesman for Chris Cuomo has said the former anchor was transparent with CNN executives about his efforts to aid his brother.

That investigation eventually ensnared Mr. Zucker, who resigned earlier this month, citing his failure to disclose a consensual relationship with Ms. Gollust.

WarnerMedia Chief Executive Jason Kilar said in a memo at the conclusion of the investigation that WarnerMe-

dia had found violations of CNN's news standards and practices by Mr. Cuomo, Ms. Gollust and Mr. Zucker. Ms. Gollust resigned last week. Following Mr. Kilar's memo, Ms. Gollust said she was disappointed by the way she was treated "after spending the past nine years defending and upholding CNN's highest standards of journalistic integrity."

Some of CNN's most prominent anchors—including Messrs. Tapper and Lemon—questioned Mr. Kilar about Mr. Zucker's resignation in tense staff meetings in the days after his exit.

Many CNN employees are personally loyal to Mr. Zucker, who recruited and promoted some of its biggest stars, and were hurt by his sudden resignation.

Other CNN journalists interviewed by The Wall Street Journal in recent weeks said CNN needs to move on from the upheaval created by Mr. Zucker's departure, which they said they view as a distraction from the network's journalism mission.

In the wake of Mr. Zucker's departure, Mr. Zaslav began aggressively courting Mr. Licht, according to people close to the matter. Mr. Zaslav and Mr. Licht have had a cordial relationship for years.

Mr. Licht is also close to Mr. Zucker, and was considered a candidate for a senior role at CNN even before Mr. Zucker resigned, a person familiar with the matter said.

CNN is currently being run by Amy Entelis, executive vice president for talent and content development; Michael Bass, executive vice president of programming; and Ken Jautz, an executive vice president.



Institutional clients made \$1.14 trillion in trades on Coinbase in 2021.

BUSINESS & FINANCE

Pace of New IPOs In Biotech Sector Slows After Boom

By BRIAN GORMLEY

Initial public offerings by biotechnology companies are slowing after two record-setting years as the poor performance of some recent IPOs combined with economic and geopolitical uncertainties have cooled interest in the sector.

Seven biotech companies have gone public in the U.S. this year as of Feb. 22, compared with 21 as of the same date in 2021, according to data from Nasdaq, the exchange that hosted nearly all of those stock-market debuts.

Surging innovation and biotech's role in combating the pandemic drew investors to the industry in 2021 and 2020. Last year, 111 biotechs went public in the U.S., topping the previous peak of 91 in 2020, according to Nasdaq.

Over the past year the SPDR S&P Biotech ETF, an equal-weighted index of biotech stocks, fell by about 44%, while the S&P 500 is up slightly. That along with macroeconomic concerns, such as the prospect of rising interest rates and the Russian invasion of Ukraine, are giving IPO buyers pause, investors said.

"The industry was in for a rebalancing," said Nina Kjellson, a general partner with venture firm Canaan Partners.

Investors have been inundated with biotech IPOs, and there haven't been a significant number of standout clinical-trial successes recently, said Rahul Chaudhary, head of healthcare equity capital markets for investment bank SVB Securities LLC. With the shares of several biotechs trading down since they went public, investors don't necessarily have to buy into IPOs when seeking attractive opportunities, he added.

"The sheer number of companies that came public made people stop and say, 'Maybe we need to slow down the spigot,'" Mr. Chaudhary said.

The tightening IPO market hasn't led to drastic changes in biotech venture-capital financings yet, investors said. U.S. biotech startups raised \$29.66 billion in venture capital last year, up from \$20.05 billion in 2020 and \$12.55 billion in 2019, according to Silicon Valley Bank.

Additionally, U.S. healthcare venture capitalists secured \$28.3 billion in 2021, compared with \$16.8 billion the year before, according to SVB.

Because many biotech startups are well funded and venture capital remains abundant, biotechs have yet to feel a significant pinch, though that will change if the IPO slowdown persists into this year, some investors said.

Ally Bridge Group has been advising startups not to rush toward IPOs because private capital is readily available, said Frank Yu, the firm's founder, chief executive and chief investment officer. Ally invests in private and public healthcare companies.

Many industry fundamentals remain strong, analysts said, citing continued innovation

Few standout successes in clinical trials have been reported recently.

and reduced regulatory uncertainty because of the recent confirmation of Robert Califf as commissioner of the Food and Drug Administration.

Biotech IPOs will rebound as companies generate positive clinical trial data and broader market challenges subside, some observers added. The number of biotechs planning to go public in the next 12 to 18 months remains comparable to the number in recent years, said Jordan Saxe, head of healthcare listings for Nasdaq.

"The inventory is strong, the question is going to be on the demand side—how many end up getting out this year versus next year," Mr. Saxe said.

Biotechs also shouldn't fixate on IPOs, said Lee Cooper, a venture investor with Leaps by Bayer, the venture-capital arm of life-sciences company Bayer AG. In biotech, IPOs should be thought of as one way of funding the development of a new medicine, he said.

"[An] IPO is a major financing event," Mr. Cooper said. "But it is not the endgame for a biotech company."

THE TICKER MARKET EVENTS COMING THIS WEEK



Salesforce.com is expected to post earnings of 75 cents a share.

Monday	Wednesday	Expected	227,000
Chicago PMI	EIA status report	ISM non-mfg index	
Jan, previous 65.2	Previous change in stocks in millions of barrels	Jan, previous 59.9	
Feb, expected 63.4	Crude-oil stocks up 4.5	Feb, expected 60.7	
Earnings expected*	Gasoline stocks down 0.6	Productivity	
Estimate/Year Ago	Distillates down 0.6	3rd qtr, prev. up 6.6%	
HP 1.02/0.92	Mort. bankers indexes	4th qtr. prel, exp. up 6.7%	
Lucid Group (0.35)/n.a.	Purch, prev. down 10%	Unit labor costs	
Oneok 0.89/0.69	Refinan, prev. down 16%	3rd qtr, prev. up 0.3%	
SBA Communications 0.68/0.94	Earnings expected*	4th qtr. prel, exp. up 0.3%	
Viatrix 0.83/0.76	Estimate/Year Ago		
Workday 0.71/0.73	Descartes Systems	Earnings expected*	
Tuesday	0.25/0.20	Estimate/Year Ago	
Construction spending	Dollar Tree 1.78/2.13	Best Buy 2.77/3.48	
Dec, previous up 0.2%	Donaldson Co. 0.62/0.52	Broadcom 8.13/6.61	
Jan, expected up 0.0%	Pure Storage 0.26/0.13	Cooper Cos. 3.10/3.17	
ISM mfg. index	Splunk (0.21)/0.38	Costco Wholesale 2.75/2.14	
Jan, previous 57.6	Veeva Systems 0.88/0.78	Grab Holdings (0.15)/n.a.	
Feb, expected 58.0	Thursday	Kroger 0.73/0.81	
Earnings expected*	EIA report: natural gas	Friday	
Estimate/Year Ago	Previous change in stocks in billions of cubic feet	Nonfarm payrolls	
AutoZone 17.79/14.93	down 129	Jan, previous 467,000	
Hewlett Packard 0.46/0.52	Factory orders	Feb, expected 415,000	
Enterprise 0.44/0.41	Dec, previous down 0.4%	Unemployment rate	
Hormel Foods 0.96/0.57	Jan, expected up 0.6%	Jan, previous 4.00%	
Ross Stores 0.75/1.04	Initial jobless claims	Feb, expected 3.90%	
Salesforce.com 2.85/2.67	Previous 232,000		

* FactSet Estimates earnings-per-share estimates don't include extraordinary items (Losses in parentheses) ♦ Adjusted for stock split
Note: Forecasts are from Dow Jones weekly survey of economists

This announcement is neither an offer to purchase nor a solicitation of an offer to sell Shares (as defined below). The Offer (as defined below) is made solely by the Offer to Purchase, dated February 28, 2022, and the related letter of transmittal and any amendments or supplements thereto. The Offer is not being made to (nor will tenders be accepted from or on behalf of) holders of Shares in any jurisdiction in which the making of the Offer or the acceptance thereof would not be in compliance with the securities, blue sky or other laws of such jurisdiction or any administrative or judicial action pursuant thereto. Purchaser (as defined below) may, in its discretion, take such action as it deems necessary to make the Offer to holders of Shares in such jurisdiction. In any jurisdiction where the securities, blue sky or other laws require the Offer to be made by a licensed broker or dealer, the Offer will be deemed to be made on behalf of Purchaser or by one or more registered brokers or dealers licensed under the laws of such jurisdiction.

Notice of Offer to Purchase for Cash All Outstanding Shares of Common Stock of Resonant Inc. at \$4.50 Net Per Share Pursuant to the Offer to Purchase Dated February 28, 2022 by PJ Cosmos Acquisition Company, Inc. a wholly owned subsidiary of Murata Electronics North America, Inc.

PJ Cosmos Acquisition Company, Inc. ("Purchaser"), a Delaware corporation and a wholly owned subsidiary of Murata Electronics North America, Inc. ("Parent"), a Texas corporation and an indirect subsidiary of Murata Manufacturing Co., Ltd., a Japanese company, is offering to purchase all outstanding shares of common stock, par value \$0.001 per share (individually, a "Share" and collectively, the "Shares"), of Resonant Inc. ("RESN"), a Delaware corporation, for \$4.50 per Share, net to the seller in cash, without interest and less any applicable withholding taxes (the "Offer Price"), upon the terms and subject to the conditions set forth in the Offer to Purchase, dated February 28, 2022 (together with any amendments or supplements thereto, the "Offer to Purchase"), and the related letter of transmittal (together with any amendments or supplements thereto, the "Letter of Transmittal" and, together with the Offer to Purchase, the "Offer"). Tenders of stockholders whose Shares are registered in their names and who tender directly to Computershare Trust Company, N.A. (the "Depository & Paying Agent") will not be charged brokerage fees or commissions, but such stockholders will be charged any and all transfer taxes incurred in connection with Purchaser's acquisition of such Shares pursuant to the Offer (in accordance with Instruction 6 of the Letter of Transmittal). Tenders of stockholders whose Shares are registered in the name of their broker, dealer, bank, trust company or other nominee should consult such nominee to determine if any fees may apply. Following the consummation of the Offer, and subject to the conditions described in the Offer to Purchase, Purchaser intends to effect the Merger (as defined below).

THE OFFER AND WITHDRAWAL RIGHTS EXPIRE AT ONE MINUTE FOLLOWING 11:59 PM, EASTERN TIME, ON MARCH 25, 2022, UNLESS THE OFFER IS EXTENDED OR TERMINATED.

The Offer is conditioned upon, among other things: (i) there being validly tendered and not withdrawn prior to the expiration of the Offer, a number of Shares that, together with the Shares then owned by Parent or any of its wholly owned subsidiaries (including Purchaser) (but excluding Shares tendered pursuant to guaranteed delivery procedures that have not yet been received, as defined by Section 251(h)(6) of the DGCL), would represent a majority of the total number of Shares outstanding as of immediately prior to the time of acceptance for payment of all Shares that are validly tendered in the Offer (the "Offer Acceptance Time" and such condition, the "Minimum Condition"); and (ii) any applicable waiting period with respect to the purchase of Shares pursuant to the Offer under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, having expired or been terminated (the "HSR Condition"). The Offer is also subject to the other conditions described in the Offer to Purchase.

The Offer is being made pursuant to an Agreement and Plan of Merger dated as of February 14, 2022 (the "Merger Agreement"), by and among Parent, Purchaser and RESN. The Merger Agreement provides, among other things, that after consummation of the Offer, Purchaser will merge with and into RESN (the "Merger") in accordance with Section 251(h) of the General Corporation Law of the State of Delaware, as amended (the "DGCL"), with RESN continuing as the surviving corporation and a wholly owned subsidiary of Parent. At the effective time of the Merger, each outstanding Share (other than any Shares held by Parent, Purchaser, RESN or any of Parent's or RESN's wholly owned subsidiaries and any Shares held by stockholders who validly exercise their appraisal rights in connection with the Merger) will be automatically converted into the right to receive the price per Share paid in the Offer, payable net to the holder in cash, without interest and less any applicable withholding taxes. The Merger Agreement is more fully described in Section 13 of the Offer to Purchase.

The board of directors of RESN has unanimously: (i) determined that the transactions contemplated by the Merger Agreement, including the Offer and the Merger, are fair to, and in the best interest of RESN and the RESN stockholders; (ii) approved, adopted and declared advisable the execution, delivery and performance by RESN of the Merger Agreement and the transactions contemplated thereby, including the Offer and the Merger; (iii) resolved that the Merger shall be effected as soon as practicable following the Offer Acceptance Time without a vote of the stockholders of RESN pursuant to Section 251(h) of the DGCL; and (iv) subject to the terms of the Merger Agreement, resolved and agreed to recommend that the holders of Shares accept the Offer and tender their Shares pursuant to the Offer.

Upon the terms and subject to the conditions of the Offer (including, if the Offer is extended or amended, the terms and conditions of any extension or amendment), Purchaser will purchase, as promptly as practicable after the expiration of the Offer, all Shares validly tendered and not properly withdrawn prior to one minute following 11:59 PM, Eastern time, on March 25, 2022 (or any later time to which Purchaser, subject to the terms of the Merger Agreement, extends the period of time during which the Offer is open (as it may be extended, the "Expiration Date")). If, on any scheduled Expiration Date, any condition to the Offer has not been satisfied or waived by Parent or Purchaser, and if the Merger Agreement has not been terminated pursuant to its terms, Purchaser will (if requested by RESN) extend the Offer for successive periods of up to 10 business days per extension; provided that (i) if any governmental authority in any jurisdiction in which Parent, Purchaser, RESN or their respective subsidiaries, taken as a whole, have material business operations shall have enacted, issued, promulgated, enforced or entered any applicable law or order which is then in effect and prohibits the consummation of the Offer or the Merger and such event has not been waived or cured before any scheduled Expiration Date, Purchaser will not be required to extend the Offer, and (ii) if, on any scheduled Expiration Date, all conditions to the Offer other than the Minimum Condition have been satisfied or waived, Purchaser will only be required to extend the Offer beyond such date for one or more additional periods not to exceed an aggregate of 30 business days to permit the Minimum Condition to be satisfied. Purchaser will not be obligated to extend the Offer beyond the earlier to occur of (1) the valid termination of the Merger Agreement pursuant to its terms or (2) June 14, 2022 (as it may be extended until August 14, 2022 under certain circumstances, in accordance with the terms of the Merger Agreement, the "End Date").

Any extension, termination or amendment of the Offer will be followed as promptly as practicable by a public announcement thereof consistent with the requirements of the SEC. In the case of an extension of the Offer, Purchaser will inform the Depository & Paying Agent of that fact and will make a public announcement of such extension, no later than the earlier of (i) 9:00 AM, Eastern time, or (ii) the first opening of Nasdaq, on the next business day after the previously scheduled Expiration Date. During any extension of the Offer, all Shares previously validly tendered and not properly withdrawn will remain subject to the Offer and subject to the right of a tendering stockholder to withdraw such stockholder's Shares.

Purchaser reserves the right to waive, in whole or in part, any of the conditions to the Offer (other than the Minimum Condition which may not be amended or waived) and to change the Offer Price; provided, however, that unless otherwise contemplated by the Merger Agreement or Purchaser receives RESN's written consent, Purchaser cannot (i) decrease the Offer Price, (ii) change the form of consideration payable in the Offer (other than by adding consideration), (iii) decrease the number of Shares sought to be purchased in the Offer, (iv) add any conditions to the Offer, (v) supplement, modify or amend any conditions to the Offer in a manner that broadens such conditions or is adverse to the holders of Shares, or (vi) extend or otherwise change the expiration date of the Offer other than in accordance with the Merger Agreement.

In order to tender Shares in the Offer, a stockholder must (i) complete and sign the Letter of Transmittal according to its instructions and deliver the Letter of Transmittal, together with any required signature guarantees, the certificates representing the tendered Shares (except in the case of Shares held in a book-entry/direct registration account ("DRS Account") maintained by RESN's transfer agent (such Shares, "DRS Shares")) and any other documents required by the Letter of Transmittal to the Depository & Paying Agent or (ii) follow the procedures for book-entry transfer set forth in Section 3 of the Offer to Purchase. If Shares are registered in the name of a broker, dealer, bank, trust company or other nominee, a tendering stockholder must contact such person and instruct such person to tender such Shares. If a stockholder wishes to tender Shares in the Offer but (a) the certificates representing such Shares are not immediately available or cannot be delivered to the Depository & Paying Agent prior to the Expiration Date, (b) such stockholder cannot comply with the procedures for book-entry transfer described in the Offer to Purchase prior to the Expiration Date or (c) such stockholder cannot deliver all required documents to the Depository & Paying Agent prior to the Expiration Date, such stockholder may tender Shares by complying with the guaranteed delivery procedures set forth in Section 3 of the Offer to Purchase.

For purposes of the Offer, Purchaser will be deemed to have accepted for payment tendered Shares when, as and if Purchaser gives oral or written notice of Purchaser's acceptance to the Depository & Paying Agent. Purchaser will pay for Shares accepted for payment pursuant to the Offer by depositing the purchase price with the Depository & Paying Agent, which will act as agent for tendering stockholders for the purpose of receiving payments from Purchaser and transmitting such payments to tendering stockholders. Under no circumstances will Purchaser pay interest on the consideration paid for Shares accepted for purchase in the Offer, regardless of any extension of the Offer or any delay in making payment for such Shares.

In all cases, Purchaser will pay for Shares accepted for payment pursuant to the Offer only after timely receipt by the Depository & Paying Agent of (i) certificates representing such Shares (except in the case of DRS Shares) or confirmation of book-entry transfer of such Shares into the Depository & Paying Agent's account at the Book-Entry Transfer Facility (as defined in Section 3 of the Offer to Purchase), (ii) a properly completed and duly executed Letter of Transmittal with all required signature guarantees or, in the case of a book-entry transfer, an Agent's Message (as defined in Section 3 of the Offer to Purchase) in lieu of the Letter of Transmittal and (iii) any other documents required by the Letter of Transmittal.

Except as otherwise provided in the Offer to Purchase, tenders of Shares made pursuant to the Offer are irrevocable. Shares tendered pursuant to the Offer may be withdrawn (i) at any time before the Expiration Date and (ii) if Purchaser has not accepted for payment Shares tendered pursuant to the Offer by April 29, 2022, which is the 60th day after the date of the commencement of the Offer, at any time after such date, in each case by complying with the procedures set forth below.

For a withdrawal to be effective, a written transmission notice of withdrawal with respect to the Shares must be timely received by the Depository & Paying Agent at one of its addresses set forth on the back cover of the Offer to Purchase, and the notice of withdrawal must specify the name of the person who tendered the Shares to be withdrawn, the number of Shares to be withdrawn and the name of the registered holder of the Shares, if different from that of the person who tendered such Shares. If the Shares to be withdrawn have been delivered to the Depository & Paying Agent, a signed notice of withdrawal with (except in the case of Shares tendered by an Eligible Institution (as defined in Section 3 of the Offer to Purchase)) signatures guaranteed by an Eligible Institution must be submitted before the release of such Shares. In addition, such notice must specify, in the case of Shares tendered by delivery of certificates, the serial numbers shown on the specific certificates evidencing the Shares to be withdrawn or, in the case of DRS Shares or Shares tendered by book-entry transfer, the name and number of the DRS Account or the account maintained at the Book-Entry Transfer Facility, respectively, to be credited with the withdrawn Shares. Withdrawals may not be rescinded, and Shares withdrawn will thereafter be deemed not validly tendered. However, withdrawn Shares may be retendered at any time before the Expiration Date by following the procedures described in Section 3 of the Offer to Purchase.

The tender of Shares in exchange for cash pursuant to the Offer or pursuant to the Merger will be a taxable transaction for U.S. federal income tax purposes and may also be a taxable transaction under applicable state, local, foreign and other tax laws. Each stockholder should consult its own tax advisor about the specific tax consequences to such stockholder of tendering Shares pursuant to the Offer, or receiving payment for Shares pursuant to the Merger, including the effects of applicable state, local, non-U.S. and other tax laws.

The information required to be disclosed by paragraph (d)(1) of Rule 14d-6 of the General Rules and Regulations under the Exchange Act is contained in the Offer to Purchase and is incorporated herein by reference.

RESN has provided to Purchaser its stockholder list and security position listing for the purpose of disseminating the Offer to holders of Shares. In accordance with the Merger Agreement and applicable law, Purchaser will mail the Offer to Purchase, the related Letter of Transmittal and other related documents to record holders of Shares and to brokers, dealers, banks, trust companies and other nominees whose names appear on the stockholder list or, if applicable, who are listed as participants in a clearing agency's security position listing for subsequent transmittal to beneficial owners of Shares.

The Offer to Purchase and the related Letter of Transmittal contain important information that should be read carefully before any decision is made with respect to the Offer.

Questions and requests for assistance and copies of the Offer to Purchase, the Letter of Transmittal and all other Offer materials may be directed to D.F. King & Co., Inc., the information agent for the Offer (the "Information Agent"), at its telephone number or e-mail address set forth below and will be furnished promptly at Purchaser's expense. Neither Parent nor Purchaser will pay any fees or commissions to any broker or dealer or any other person (other than to the Information Agent and the Depository and Paying Agent) for soliciting tenders of Shares pursuant to the Offer.

The Information Agent for the Offer is:
D.F. King & Co., Inc.
48 Wall Street
New York, New York 10005
Shareholders Call (Toll-Free): (800) 676-7437
Banks and Brokers Call: (212) 269-5550
By Email: RESN@dfking.com

February 28, 2022

BUSINESS & FINANCE

CIO Role in Flux as Businesses Embrace New Tech

By ANGUS LOTEN

Chief information officers say their role is evolving, as cloud computing and other innovations make it easier for business leaders to deploy technology beyond the control of the IT department.

"Of all the roles that we cover, the role of CIO is in the most flux now," said Chris Howard, chief of research at business consultant Gartner Inc. While enterprise technology's impact on the survival of the business has accelerated, the question is who is in charge of that, Mr. Howard said. "Sometimes it is the CIO, sometimes not," he said.

In response, many CIOs are leaving software and other enterprise technology decisions to finance, marketing, sales and other departments, and turning their attention to core business strategies.

The move to let business units run their own IT shop—a shift tech leaders resisted for years, citing integration and security issues—comes as cloud computing, data analytics, automation and other capabilities become critical functions at companies, said Kim Bozzella, managing director



EMILY ELCONIN/BLOOMBERG NEWS

Carhartt Inc. launched an initiative to create dedicated tech teams in every department.

and leader of the global technology consulting practice at management-consulting firm Protiviti Inc.

Though most CIOs continue to oversee data governance, compliance and other higher-level IT functions, when it comes to day-to-day business apps they are more likely to be seen as advisers.

In a survey last year of 985

IT leaders and 250 line-of-business workers, by market research firm International Data Group, nearly 60% of workers outside of IT described their company's CIO as a "strategic advisor who proactively identifies business opportunities and makes recommendations." IDG said 86% said groups or functions outside of IT have their own tech

budgets.

"The push to transform has stressed that companies that silo technology to their IT departments will be quickly out-run by competitors," said Jeff Wong, global chief innovation officer at Ernst & Young LLP.

Irving Tyler, distinguished research vice president at Gartner, said the proliferation of digital technology means

CIOs can no longer be the owner-operator of every system in the enterprise anymore." Technology leaders who cling to an older mind-set are "going to struggle," he said.

John Hill, chief digital and information officer at Carhartt Inc., said many of the responsibilities he used to have over enterprise technology are flattening out across the company. His focus now is on ensuring systems are integrated, secure and aligned with the company's long-term strategy, he said: "I do think the role has changed."

Recently, the U.S. apparel maker launched an initiative to create dedicated tech teams in every department, starting with its wholesale, direct-to-consumer and customer-care units. Mr. Hill said the teams—which he calls "squads"—consist of both tech and business experts. Though under his watch, he said, "the prioritization of what's being done is in the squad."

At many companies, business segments aren't waiting for IT to bulk up on tech talent. According to Gartner, an average of 41% of today's total global corporate workforce is

made up of what it calls "business technologists"—employees hired into departments outside of IT to build tech tools and other digital capabilities. The average percentage of these employees within organizations varies by industry, from 28% in the public sector, to a high of 55% in the energy sector, Gartner said.

Many tech providers have started pitching cloud-based and low-code software tools, designed to be ready-made or easily customized, directly to business segments, bypassing traditional IT gatekeepers—a trend that accelerated during the pandemic, analysts said.

Sam Deshpande, CIO at health-insurance provider Humana Inc., said having dedicated tech teams in each of the company's business segments gives IT leaders a unique position to view the entire enterprise-technology ecosystem. As such, he said, every segment's unique decision on tech investing gets integrated with the company's broader business strategy.

"I am impressed with how the Humana business leaders have leaned in to understand contemporary technology capabilities," he said.

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CLASS ACTION

SUMMARY NOTICE OF CLASS ACTION
SUPERIOR COURT OF THE STATE OF CALIFORNIA, COUNTY OF SANTA CLARA

TO: ALL PERSONS OR ENTITIES WHO ACQUIRED MAXAR TECHNOLOGIES, INC. ("MAXAR") COMMON STOCK IN EXCHANGE FOR DIGITALGLOBE, INC. ("DIGITALGLOBE") COMMON STOCK IN CONNECTION WITH MAXAR'S OCTOBER 2017 ACQUISITION AND MERGER WITH DIGITALGLOBE (THE "CLASS").

A California court authorized this Notice. This is not a solicitation from a lawyer.

PLEASE READ THIS SUMMARY NOTICE CAREFULLY IN ITS ENTIRETY. YOUR RIGHTS MAY BE AFFECTED BY A CLASS ACTION CASE PENDING IN COURT.

- You Are Hereby Notified that your rights may be affected by a lawsuit pending in the Superior Court of the State of California, County of Santa Clara (the "Court"), against Maxar Technologies, Inc. ("Maxar"), Howard L. Lance, Anil Wirasekara, Angela Lau, Robert L. Phillips, Dennis H. Chookaszian, Lori B. Garver, Joanne O. Isham, Robert Kehler, Brian G. Kenning, and Eric Zahler ("Individual Defendants" and with Maxar collectively, "Defendants"). In October 2017, Maxar, a satellite manufacturer, acquired and merged with DigitalGlobe, Inc. ("DigitalGlobe"), a satellite imagery company (the "Merger"). Plaintiff alleges that in connection with the Merger, Maxar issued approximately 21 million new shares of common stock pursuant to a materially false and misleading registration statement and prospectus (collectively, with the documents incorporated therein, the "Offering Materials"). You may read a copy of the Complaint here: www.MaxarSantaClaraCountyLitigation.com.
- The Court has determined that this litigation, titled *In re Maxar Technologies Inc. Shareholder Litigation*, No. 19CV357070 (Cal. Super. Ct.) ("Litigation"), may proceed as a class action on behalf of the Class, except for certain persons and entities that are excluded from the Class by definition as set forth in the full printed Notice of Class Action. This Summary Notice provides only limited information about the Litigation. The full printed Notice of Class Action ("Notice") is currently being mailed to known Class members. If you have not yet received a full printed Notice, you may obtain a copy from the website for the Action at www.MaxarSantaClaraCountyLitigation.com or by contacting A.B. Data, Ltd. ("Administrator"). The Administrator's contact information is:

In re Maxar Technologies Inc. Shareholder Litigation
Notice Administrator
c/o A.B. Data, Ltd.
P.O. Box 173131
Milwaukee, WI 53217
info@MaxarSantaClaraCountyLitigation.com
Toll-Free Number: (877) 888-9470

If you did not receive the Notice by mail and you believe you are a member of the Class, please send your name and address to the Administrator so if any future notices are disseminated in connection with the Action, you will receive them.

- Who is Included in the Class?** You are a Class member if you acquired Maxar common stock in exchange for DigitalGlobe common stock pursuant to the Offering Materials issued in connection with Maxar's October 2017 merger and acquisition of DigitalGlobe. Excluded from the Class are Defendants and their families; the officers, directors, and affiliates of Defendants, at all relevant times; members of their immediate families and their legal representatives, heirs, successors, or assigns; and any entity in which Defendants have or had a controlling interest. Also excluded from the Class are any former DigitalGlobe shareholders who entered into a release of claims in connection with the DigitalGlobe appraisal actions. See, e.g., *In re Appraisal of DigitalGlobe, Inc. Common Stock and Preferred Stock*, Consol. C.A. No. 2017-0810 (Del. Ch.).
- What are my Rights and Options?** If you are a Class member, by doing nothing you will keep the possibility of getting money or benefits, if any, from this Litigation. If you stay in the Class and Plaintiff obtains money or benefits, you will be notified about how to apply for a share. By staying in the Class, you will also be legally bound by all orders the Court issues and the judgment the Court makes in this Litigation. If you do nothing now, regardless of whether Plaintiff wins or loses, you will give up your right to sue or continue to sue Defendants as part of any other lawsuit about the same legal claims in this Litigation.
- If you do not want to be a member of the Class, you must opt out pursuant to the instructions below. If you opt out of the Class, you may not be able to assert individual claims asserting securities law violations against Defendants, as such claims may no longer be timely. You will need to decide whether to pursue any individual lawsuit, claim, or remedy that you may have at your own expense. You are encouraged to seek legal advice concerning the potential impact of opting out on your legal rights, including to determine if your claims would be barred by the applicable statutes of limitation or repose. If you do not want to be a member of the Class, you **must** send a signed letter by U.S. Mail saying you want to be excluded from the Class and include the information listed below.

Your request must contain the following information: (a) your name, telephone number, email address, and mailing address, (b) your statement that you believe you are a Class member and you wish to be excluded from the Class, (c) the name and docket number of this case: *In re Maxar Technologies Inc. Shareholder Litigation*, No. 19CV357070 (Cal. Super. Ct.), and (d) be personally signed by you.

Your request to exclude yourself may not be signed by a lawyer or anyone acting on your behalf.

Mail the form to the following address:

In re Maxar Technologies Inc. Shareholder Litigation
Notice Administrator - EXCLUSIONS
c/o A.B. Data, Ltd.
P.O. Box 173001
Milwaukee, WI 53217

Be sure to sign the form and complete all required information. To be valid, opt-out requests must be postmarked no later than April 23, 2022.

- This Notice is not an expression of any opinion by the Court as to the merits of any of the claims or defenses asserted by any party in this Litigation.
- If you have any questions concerning the matter raised in this Summary Notice or the full Notice, you may contact the Administrator or address your questions to:

Court-Appointed Class Counsel

<p>Adam E. Polk Makenna Cox GIRARD SHARP LLP 601 California Street, Suite 1400 San Francisco, CA 94108 Telephone: (415) 981-4800 Facsimile: (415) 981-4846 apolk@girardsharp.com mc Cox@girardsharp.com</p>	<p>David W. Hall Armen Zohrabian HEDIN HALL LLP Four Embarcadero Center, Suite 1400 San Francisco, CA 94111 Telephone: (415) 766-3534 Facsimile: (415) 402-0058 dhall@hedinhall.com azohrabian@hedinhall.com</p>
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Central case documents can be found online at: www.MaxarSantaClaraCountyLitigation.com. The pleadings and other records in this Litigation may be examined (a) online on the Superior Court of California, County of Santa Clara's Electronic Filing and Service Website available on the Court's website (<https://www.sccscourt.org/>) or through the Santa Clara Superior Court Portal at <https://portal.sccscourt.org/>, or (b) in person at Records, Superior Court of California, County of Santa Clara, 191 N. 1st Street, San Jose, California 95113, between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday, excluding Court holidays and closures.

PLEASE DO NOT TELEPHONE OR CONTACT THE COURT OR CLERK OF THE COURT, DEFENDANTS, OR THEIR COUNSEL REGARDING THIS NOTICE.

THIS IS ONLY A SUMMARY NOTICE. IF YOU BELIEVE YOU MAY BE A MEMBER OF THE CLASS, YOU ARE URGED TO OBTAIN A COPY OF THE FULL NOTICE, WHICH IS ACCESSIBLE AT WWW.MAXARSANTACLARACOUNTYLITIGATION.COM OR BY CONTACTING THE ADMINISTRATOR AT (877) 888-9470 OR AT INFO@MAXARSANTACLARACOUNTYLITIGATION.COM.

Dated: February 28, 2022

By Order of the Superior Court of California
County of Santa Clara
The Honorable Sunil R. Kulkarni

CLASS ACTION

If you sold any physical gold or financial or derivative instrument where gold is the underlying reference asset, or you bought gold put options in transactions conducted over-the-counter or in whole or in part on COMEX or on any other exchange in the United States between January 1, 2004 and June 30, 2013, you may be affected by two recent developments in class-action settlements.

First, there is now a new and additional proposed settlement (the "Third Settlement Agreement") for \$50,000,000 reached with Barclays Bank PLC, The Bank of Nova Scotia, Société Générale, and The London Gold Market Fixing (the "Newly Settling Defendants"). Defendants deny any liability, fault, or wrongdoing of any kind in connection with the allegations in the Action. By entering into their respective settlements, Defendants have not admitted to any such liability, fault, or wrongdoing, and nothing in the three settlement agreements or this Notice shall be construed as such an admission.

Second, in connection with earlier settlements totaling \$102 million, class members were asked to exclude on their claim forms positions opened and closed the same day. You must submit a revised claim form to benefit from a proposed change that would instead allow such claims in part. You may also be heard to object to this proposed change, or the Plan of Allocation generally. You may also exclude yourself from the earlier settlements. Please see www.GoldFixSettlement.com for additional details. Revised claim forms are due by April 19, 2022.

The United States District Court for the Southern District of New York (the "Court") authorized this Notice. The Court has appointed the lawyers listed below to represent the Settlement Class in this Action:

Merrill Davidoff
Berger Montague PC,
1818 Market Street, Suite 3600
Philadelphia, PA 19103

Daniel Brockett
Quinn Emanuel Urquhart & Sullivan
51 Madison Avenue, 22nd Floor
New York, NY 10010

Who Is a Member of the Settlement Class? The proposed Settlement Class includes:

All persons or entities who during the period from January 1, 2004 through June 30, 2013, either (A) sold any physical gold or financial or derivative instrument in which gold is the underlying reference asset, including, but not limited to, those who sold (i) gold bullion, gold bullion coins, gold bars, gold ingots or any form of physical gold, (ii) gold futures contracts in transactions conducted in whole or in part on COMEX or any other exchange operated in the United States, (iii) shares in gold exchange-traded funds ("ETFs"), (iv) gold call options in transactions conducted over-the-counter or in whole or in part on COMEX or any other exchange operated in the United States; (v) gold spot, gold forwards or gold swaps over-the-counter; or (B) bought gold put options in transactions conducted over-the-counter or in whole or in part on COMEX or on any other exchange operated in the United States.

The capitalized terms used in this Summary Notice if not defined herein are defined in the detailed Notice of a New and Additional Proposed Class Action Settlement ("Notice") and the relevant settlement agreements, which are available at www.GoldFixSettlement.com. If you are not sure if you are included in the Settlement Class, you can get more information, including the detailed Notice, at www.GoldFixSettlement.com or by calling toll-free 1-844-271-4787 (if calling from outside the United States or Canada, call 1-267-238-9078).

What is This Lawsuit and What Do the Settlements Provide? This lawsuit alleges that the Defendants engaged in anticompetitive acts that affected the market for gold. If the Court gives final approval to all three Settlements, there will be a total of \$152 million in recoveries, and the case will come to an end.

Will I Get a Payment? If you are a member of a Settlement Class and do not opt out from that class, you will be eligible to file a Proof of Claim and Release ("Claim Form"). The amount of your payment will be determined by the Plans of Allocation. Details about the Plans of Allocation are available at www.GoldFixSettlement.com or by calling toll-free 1-844-271-4787 (if calling from outside the United States or Canada, call 1-267-238-9078). A date for distribution of the Settlement Funds has not been set. Claim Forms (new or revised) must be submitted by April 19, 2022. If you filed a claim in connection with the prior two settlements, that information will be treated as a claim in connection with the Third Settlement Agreement with no further action required on your part.

What Are My Rights? If you are a member of a Settlement Class and do not opt out, you will release certain legal rights, as explained in the detailed Notices and Settlement Agreements, which are available at www.GoldFixSettlement.com. If you do not want to take part in the original settlements you must opt out by April 19, 2022. If you do not want to take part in the Third Settlement Agreement, you must opt out by April 19, 2022. You may object to the Third Settlement Agreement and/or application for an award of attorneys' fees, payment of litigation costs and expenses, and/or service awards for Plaintiffs for the Third Settlement Agreement. You may also object to the Plans of Allocation. If you want to object, you must do so by June 24, 2022. Information on how to opt out or object is contained in the detailed Notices, which are available at www.GoldFixSettlement.com. Even if you filed an opt-out request in connection with the prior two settlements, you must do so in connection with the Third Settlement Agreement if you do not want to be bound by its terms.

When Is the Fairness Hearing? The Court will hold a hearing at the United States District Court for the Southern District of New York, Thurgood Marshall United States Courthouse, 40 Foley Square, Courtroom 443, New York, NY 10007, on **August 5, 2022 at 10:00 AM** to consider whether to finally approve, among other things, the Third Settlement Agreement, Co-Lead Counsel's application for an award of attorneys' fees and expenses in connection with the Third Settlement Agreement, and the Plans of Allocation. Given the current COVID-19 situation, the Court currently expects to allow participants to attend in-person or remotely using the following dial-in information: 1-888-363-4749, using the access code 3121171, and the security code 2548. Class counsel, defense counsel, and any objectors must attend in person. You or your lawyer may ask to appear and speak at the hearing at your own expense, but you do not have to. Any changes to the time and place of the Fairness Hearing, or other deadlines, or the process for attending remotely, will be posted to www.GoldFixSettlement.com as soon as practicable.

For more information, call toll-free 1-844-271-4787 (if calling from outside the United States or Canada, call 1-267-238-9078) or visit www.GoldFixSettlement.com.

****** Please do not call the Court or the Clerk of the Court for information about the Settlements. ******

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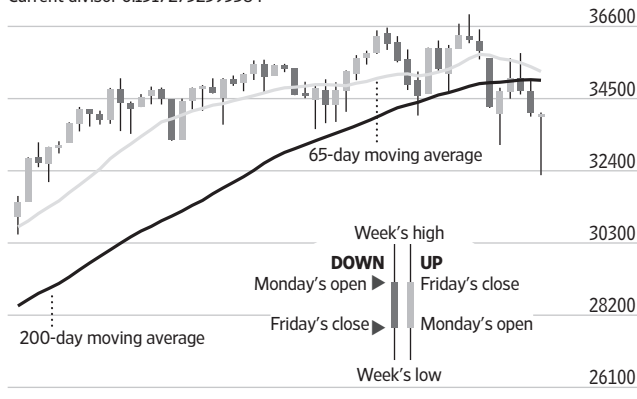
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MARKETS DIGEST

Dow Jones Industrial Average

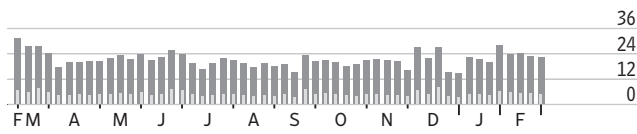
34058.75 ▼20.43, or 0.06% last week
Trailing P/E ratio 18.89 31.47
P/E estimate * 17.90 20.67
Dividend yield 2.06 1.95
All-time high 36799.65, 01/04/22

Current divisor 0.15172752595384



Bars measure the point change from Monday's open

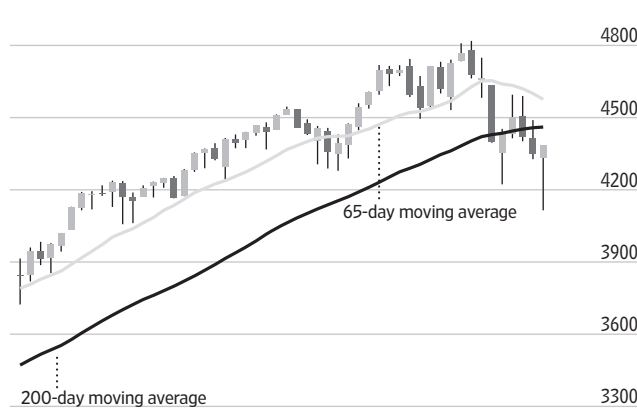
NYSE weekly volume, in billions of shares



*Weekly P/E data based on as-reported earnings from Birinyi Associates Inc.; †Based on Nasdaq-100 Index

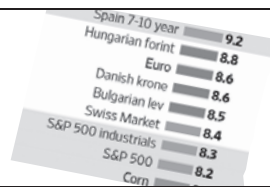
S&P 500 Index

4384.65 ▲35.78, or 0.82% last week
Trailing P/E ratio * 23.83 43.74
P/E estimate * 19.49 22.47
Dividend yield * 1.41 1.50
All-time high 4796.56, 01/03/22



Bars measure the point change from Monday's open

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Compare the performance of selected global stock indexes, bond ETFs, currencies and commodities at
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New to the Market

Public Offerings of Stock

IPOs in the U.S. Market

None expected this week

Lockup Expirations

Below, companies whose officers and other insiders will become eligible to sell shares in their newly public companies for the first time. Such sales can move the stock's price.

Table with columns: Lockup expiration, Issue date, Issuer, Symbol, Offer price(\$), Offer amt (\$ mil.), Through Friday (%), Lockup provision.

IPO Scorecard

Performance of IPOs, most-recent listed first

Table with columns: Company, SYMBOL, IPO date/Offer price, Friday's close (\$), Offer price, 1st-day close, % Chg From IPO date/Offer price, Company, SYMBOL, IPO date/Offer price, Friday's close (\$), Offer price, 1st-day close, % Chg From IPO date/Offer price.

Sources: Dealogic; Dow Jones Market Data

Major U.S. Stock-Market Indexes

Table with columns: Index, High, Low, Close, Net chg, % chg, 52-Week Close, High, % chg, YTD % chg, 3-yr. ann.

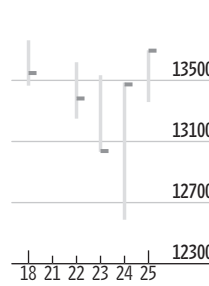
Table with columns: Index, High, Low, Close, Net chg, % chg, 52-Week Close, High, % chg, YTD % chg, 3-yr. ann.

Table with columns: Index, High, Low, Close, Net chg, % chg, 52-Week Close, High, % chg, YTD % chg, 3-yr. ann.

Sources: FactSet; Dow Jones Market Data

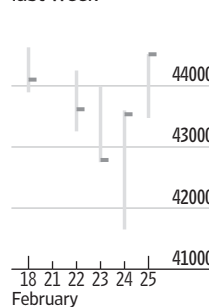
Nasdaq Composite

▲ 146.56, or 1.08% last week



DJ US TSM

▲ 414.46, or 0.94% last week



Public and Private Borrowing

Treasurys

Monday, February 28 Thursday, March 3
Auction of 13 and 26 week bills; announced on February 24; settles on March 3
Auction of 4 and 8 week bills; announced on March 1; settles on March 8

Currencies

U.S.-dollar foreign-exchange rates in late New York trading

Table with columns: Country/currency, Fri in US\$, per US\$, YTD chg (%), Country/currency, Fri in US\$, per US\$, YTD chg (%).

Sources: Tullett Prebon, Dow Jones Market Data

International Stock Indexes

Table with columns: Region/Country, Index, Close, Latest Week % chg, Low, 52-Week Range, High, YTD % chg.

Source: FactSet; Dow Jones Market Data

Commodities and Currencies

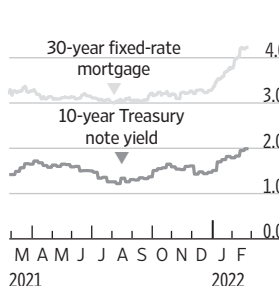
Table with columns: Commodity, Last Week Close, Net chg, % chg, YTD % chg.

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A consumer rate against its benchmark over the past year



Selected rates

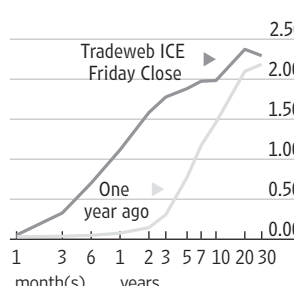
30-year mortgage, Rate

Table with columns: Bankrate.com avg, Platte Valley Bank, Dearborn Federal Svgs Bk, Farmers State Bank, First National Bank, MidWestOne Bank.

Benchmark Yields and Rates

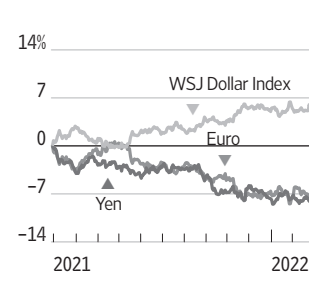
Treasury yield curve

Yield to maturity of current bills, notes and bonds



Forex Race

Yen, euro vs. dollar; dollar vs. major U.S. trading partners



Sources: Tradeweb ICE U.S. Treasury Close; Tullett Prebon; Dow Jones Market Data

Interest rate, Yield/Rate (%), 52-Week Range (%), 3-yr chg

Table with columns: Interest rate, Yield/Rate (%), 52-Week Range (%), 3-yr chg.

Bankrate.com rates based on survey of over 4,800 online banks. *Base rate posted by 70% of the nation's largest banks. † Excludes closing costs. Sources: FactSet; Dow Jones Market Data; Bankrate.com

Corporate Borrowing Rates and Yields

Table with columns: Bond total return index, Yield (%), Spread +/- Treasuries, Total Return.

Sources: J.P. Morgan; S&P Dow Jones Indices; Bloomberg Fixed Income Indices; ICE BofA

Advertisement for ChildFund.org with text 'Let's walk together. It makes things better.' and a photo of a woman walking.

CLOSED-END FUNDS

Listed are the 300 largest closed-end funds as measured by assets. Closed-end funds sell a limited number of shares and invest the proceeds in securities.

Unlike open-end funds, closed-end funds generally do not buy their shares back from investors who wish to cash in their holdings. Instead, fund shares trade on a stock exchange. NA signifies that the information is not available or not applicable. NS signifies funds not in existence for the entire period. 12 month yield is computed by dividing income dividends paid (during the previous 12 months for periods ending at month-end or during the previous 52 weeks for periods ending at any time other than month-end) by the latest month-end market price adjusted for capital gains distributions. Depending on the fund category, either 12-month yield or total return is listed.

Source: Lipper

Friday, February 25, 2022

Table with columns: Fund (SYM), NAV, Close, Disc, Prem, Ttl, Ret. Includes sections for General Equity Funds, Specialized Equity Funds, and U.S. Mortgage Bond Funds.

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A Week in the Life of the DJIA

A look at how the Dow Jones Industrial Average component stocks did in the past week and how much each moved the index. The DJIA lost 20.43 points, or 0.06%, on the week. A \$1 change in the price of any DJIA stock = 6.59-point change in the average.

Table showing stock performance for the week of Feb 22-26, 2022. Columns: Stock, Price Change, % Change, \$1,000 Invested.

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Insider-Trading Spotlight

Trading by 'insiders' of a corporation, such as a company's CEO, vice president or director, potentially conveys new information about the prospects of a company. Insiders are required to report large trades to the SEC within two business days.

Table of insider trading transactions. Columns: Date, Company, Symbol, Insider, Title, No. of shares, Price range, \$ Value, Close, Ytd %.

Biggest weekly individual trades

Table of largest individual trades. Columns: Date, Company, Symbol, Insider, Title, No. of shares, Price range, \$ Value, Close, Ytd %.

Buying and selling by sector

Table of buying and selling by sector. Columns: Sector, Buying, Selling.

Borrowing Benchmarks

Key annual interest rates paid to borrow or lend money in U.S. and international markets. Rates below are a guide to general levels but don't always represent actual transactions.

Table of borrowing benchmarks. Columns: Category, Rate, Maturity.

Money Rates

Key annual interest rates paid to borrow or lend money in U.S. and international markets. Rates below are a guide to general levels but don't always represent actual transactions.

Table of money rates. Columns: Category, Rate, Maturity.

Cash Prices

These prices reflect buying and selling of a variety of actual or "physical" commodities in the marketplace—separate from the futures price on an exchange, which reflects what the commodity might be worth in future months.

Table of cash prices for various commodities. Columns: Commodity, Price.

DTCC GCF Repo Index

Table showing DTCC GCF Repo Index values for Treasury and MBS.

Table of DTCC GCF Repo Index values for Treasury and MBS.

*Half the transactions were indirect **Two day transaction p - Pink Sheets

Sources: Refinitiv, Dow Jones Market Data

KEY TO CODES: A=ask; B=bid; BP=country elevator bids to producers; C=corrected; E=Manfra, Tordella & Brooks; H=American Commodities Brokerage Co; K=b-weekly; M=monthly; H=nominal; n.a.=not quoted or not available; R=SNL Energy; S=Platts-TSI; T=Cotlook Limited; U=USDA; V=Benchmark Mineral Intelligence; W=weekly; Z=not quoted. **Data as of 2/24

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Sources: Refinitiv, Dow Jones Market Data

HEARD ON THE STREET

FINANCIAL ANALYSIS & COMMENTARY

Zoom Has Some Tough Calls To Make

Videoconferencing star needs sales muscle

For those still inclined to think of **Zoom Video Communications** as a “pandemic stock,” consider that Covid-19 has well outlasted that status.

Zoom shares hit their all-time high in mid-October of 2020, just weeks before news of the first vaccine breakthrough helped the world see an end to ceaseless video meetings and awkward happy hours. The stock has been in a mostly downward spiral since, even as the Delta and Omicron surges pushed back office reopenings.

Zoom has shed more than three-quarters of its market value from its peak, and the stock’s multiple has gone from 55 times forward sales to about eight times in that period.

That would seem to create an easy setup for the company’s fiscal fourth-quarter results due next Monday afternoon. Zoom also seems to have set itself a fairly low bar, projecting that revenue grew by 19% year over year to about \$1.05 billion for the quarter ended Jan. 31.

Sales would be more than five times what the company managed in the same quarter two years ago, before the pandemic’s onset, though it also would be its slowest growth on record.

But many analysts are still worried. Tyler Radke of Citigroup wrote Wednesday of “rising competitive pressure,” particularly from **Microsoft**, which competes squarely with Zoom through its Teams platform. Karl Keirstead of



Zoom shed more than three-quarters of its market value from its peak.

UBS echoed a similar view Thursday, noting that Microsoft Teams is “winning more and more business on the Enterprise side.”

Growing competition from such a deep-pocketed rival will force Zoom to rev up spending in both sales and research and development. Zoom expended more than half its revenue on sales and marketing expenses before the pandemic. Explosive growth since then has skewed that ratio to an average of 27% over the past seven quarters. Zoom Chief Financial Officer Kelly Steckelberg also previously said the company intends to bring up its R&D spending, which has lately averaged just 8% of revenue.

The upshot is that Zoom’s adjusted operating margin—expected to come around 39% for the fiscal year ended January—is likely going down. Ms. Steckelberg told a UBS investment conference in December that investors “should expect continued contraction in our margins on a quarterly basis for at least next year and maybe even going forward.”

Investing in driving sales and

future opportunities is to be expected for a company with a now well-known brand and still a lot of potential upside. Gartner estimates the current market for “unified communications” sits at nearly \$45 billion a year—more than 10 times Zoom’s annual revenue.

But investors have taken a dim view lately of cloud companies generally and particularly those entering investment mode at a time when sales are also slowing. That puts Zoom in a tough spot as some analysts believe Wall Street’s expectations for 15% to 16% revenue growth in the current fiscal year are too high. Charles Rogers of M Science says the trends monitored during the fourth quarter suggest a range of 10% to 11% would be more realistic.

That could reset expectations to a more beatable level but also would fall short of the “squeaky clean prints” Morgan Stanley’s software analysts say are needed from cloud companies in the current market environment.

Zoom might not be ready for its close-up. —Dan Gallagher

Etsy’s Basket Has Some Holes

Don’t let its granola vibe fool you: **Etsy** is a selling machine.

The crafts-focused online marketplace sold \$4.2 billion in products through its website in the fourth quarter, 17% more than a year earlier and safely above the high end of its own lofty guidance and Wall Street’s expectations. Etsy beat the high end of its own revenue guidance by almost 4%.

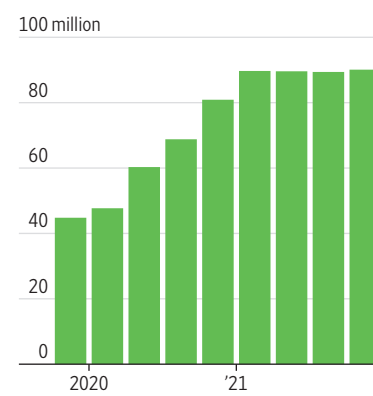
It helped that supply-chain issues were leaving other retailers’ toys and gifts stuck in container ships. Etsy’s extremely diversified seller base—more than five million of them sewing, painting or crafting their wares by hand—meant the company was able to fill that unmet demand. Home and jewelry were the top two categories for the quarter.

A major question heading into the holidays was whether Etsy could deliver all those gifts promptly. Roughly 90% of domestic orders that were estimated to be delivered in time for the holidays actually were, which the company said was a significant improvement from 2020. Further progress will be key: Reliability will help Etsy expand its pool of possible buyers.

But Chief Executive Officer Josh Silverman is aiming higher—way higher. He said during Thursday evening’s earnings call that he would like to see the website become the starting point for consumers who shop online. The company thinks its total addressable market is roughly \$2 trillion, some eight times Amazon’s expected revenue for 2022. Investors applauded. Despite muted guidance, Etsy’s shares gained 16% in Friday trading.

Too bad, then, that there is a fair chance the fourth quarter marked a growth peak for Etsy. As retailers start refilling shelves with a normal level of inventory,

Number of active buyers on Etsy, quarterly



Source: the company

and as more consumer spending shifts to travel and going out, it will be that much harder to find the kind of new trends that propelled impressive growth over the past two years, such as masks and the home and living category. Masks now account for just 1% of gross merchandise sales on Etsy.

Growth in active buyers began decelerating in the first quarter of 2021. The fourth-quarter number, for example, was up 700,000—less than 1%—from the third quarter. That compares with 18% a year earlier.

Recognizing heightened competition for consumer wallets, Etsy’s first-quarter guidance was short of Wall Street expectations, at the high end implying roughly 8% growth in gross merchandise sales. And growth won’t come as cheaply. Etsy was able to preserve its margins last quarter because it could afford to pull back on marketing. On Thursday the company said that it would be increasing its seller transaction fee to 6.5% from 5%, with part of the proceeds going to marketing.

Etsy knows how to paint a pretty picture, but can it deliver? —Jinjo Lee

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Business owners have spoken



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JOURNAL REPORT TECHNOLOGY

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THE WALL STREET JOURNAL.

Monday, February 28, 2022 | R1

What Should We Do About the Big Tech Companies?



Some argue for more regulation. Others say that would be a big mistake. Three experts debate the issue.

By STEVEN ROSENBUH

THE ONLINE WORLD is playing an ever-larger role in people's lives, especially in the wake of the pandemic. And an astonishing amount of this technology is run by a handful of companies.

Now big tech corporations are facing more governmental scrutiny than ever, with new laws and regulatory efforts taking shape in the U.S. and around the world. Regulators argue that new rules are needed. They seek to prohibit dominant platforms from favoring their own products or services, to discourage social-media companies from promoting harmful content, and to modernize antitrust laws, among other actions.

Please turn to page R4

Children in the Metaverse: Is It Safe?

The long-term effect of being in virtual worlds is unknown

By HEIDI MITCHELL

Virtual worlds are about to take a huge leap in realism and immersion.

But are they safe for the children who use them?

Youngsters have been visiting online spaces—such as Minecraft, Roblox and Fortnite—for years now, using them to hang out and play with friends (and sometimes strangers).

As virtual reality gets more

engaging and lifelike, though, the potential dangers multiply. In some sense, many of the concerns are magnified versions of existing concerns: It can be much more tempting to participate in risky activities like gambling, for instance, when you can virtually walk into a cyber-casino. And it can be tougher to spot predators when they are hiding behind ever more-believable avatars.

What's more, the long-term effects of virtual worlds aren't known. It isn't clear what happens to a child's mind after spending hours upon hours in made-up

worlds—while potentially detaching from real-world relationships and interests.

All of which raises some big questions: Should children enter these increasingly realistic virtual worlds in the first place? And how can they stay safe if they do?

The Wall Street Journal hosted a videoconference about these questions with Sun Joo (Grace) Ahn, an associate professor at the Grady College of Journalism and Mass Communication at the University of Georgia and the founding director of the Games and Virtual Environ-

Please turn to page R2

Inside

You're How Old?

Keeping children away from adult content online is complicated. But artificial intelligence may offer an answer. **R3**



Help at Home

Senior-living communities add personalized tech support as one of their perks. **R5**



Scan this code for a video on why some see Web 3.0 as the future of the internet, the key principles behind it, and why skeptics worry.



JOURNAL REPORT | TECHNOLOGY



Questions about the effects of virtual-reality experiences on children are heightened as VR becomes more lifelike.

Three Strikes And You're Locked Out. It Makes No Sense.

Why do you often get just three tries to access your account?

By Karen Renaud

Here's a scenario that no doubt sounds familiar. You type in a password to get into one of your accounts. The first two times, you type in the wrong password. Then you remember the right one. But your finger slips as you type it.

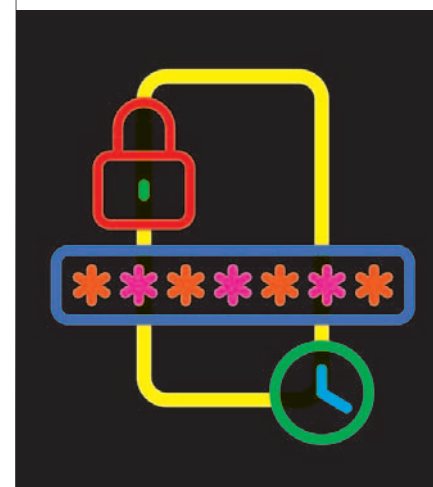
You're locked out.

The "three times lockout" rule is almost universally applied. It's also almost universally reviled. And to make things even more annoying: No one really knows why three is the magic number.

Three tries was probably initially considered the right number to allow for some forgetfulness, but not make it too easy for hackers to guess. But there is no empirical evidence that three tries is the sweet spot. It is possible that the number should not be three, but rather five, seven or even 10, as was suggested in 2003.

The problem is that it's hard to gather evidence to test the lockout threshold. If you put yourself in the shoes of a system administrator, think about how it would look if you increased the number of permitted tries, and the system gets compromised. The system administrator would be held accountable. So, the safest option is to stick with what everyone else does: Three tries and you're out.

There is also the issue of inertia. There are all sorts of legacy protocols when it comes to security. There is, for instance, the dated definition of a "complex" password. Similarly, having enforced expiration dates for pass-



words was widely considered a best practice until various bodies (including the U.S. Commerce Department's National Institute of Standards and Technology) released advice in 2017 pointing out that this was actually counterproductive.

The three times lockout rule is another of these legacy practices.

So, how do we test whether the lockout rule makes sense, since a real-world experiment is so difficult? We use a simulation. Simulations allow us to test the impact of different settings, while recording all outcomes, both good (risk reduction) and bad (risk increase). The best part is that there is no risk to any real-life system.

I developed a simulator called SimPass. It modeled password-related behaviors of virtual "agents" with human propensities, using well-established forgetting statistics to model predictable password choices, forgetting, reuse and sharing. Some malicious "agents" would attempt to breach accounts.

I worked with my colleague Rosanne English to test different lockout settings. We ran 500 simulations for each of three, five, seven, nine, 11 and 13 tries before lockout. We found that five was the optimal number—the sweet spot we were hoping to identify. When allowing five attempts, the number of lockouts were minimized, with no adverse effect on security.

I'm not hopeful that the lockout number will change overnight. Legacy protocols have a lot of staying power. But as we are forced to remember more passwords for an increasing number of accounts, perhaps our collective annoyance will be heard.

Dr. Renaud is a chancellor's fellow at the University of Strathclyde in Glasgow. Email reports@wsj.com.

What Effect Will the Metaverse Have on Children?

Continued from page R1

ments Lab; Rachel Kowert, a psychologist and the research director of Take This, a non-profit mental-health organization that provides information to the gaming industry; and Jessica Stone, a licensed psychologist and author of "Digital Play Therapy: A Clinician's Guide to Comfort and Competence." Edited excerpts follow.

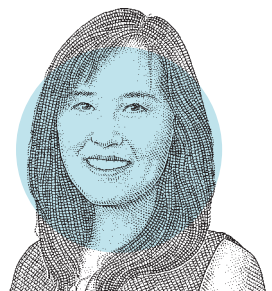
• WSJ: What is different about the way developing brains respond to virtual reality versus 2-D experiences in games and social media? And does that concern you?

• DR. KOWERT: There is a lot more sensory information available in a VR space and, because of that, the experience within these spaces is likely to feel more psychologically intense. This doesn't concern me in any specific way, per se; even kids' visual cortexes are very good at distinguishing what's real from what's not. We are not yet at a point where technology can create a digitized space that is indistinguishable from a nondigitized space.

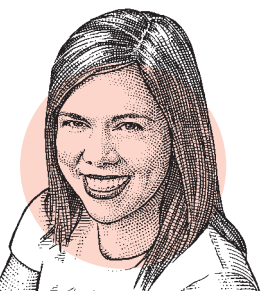
• DR. STONE: Anything that impacts a developing brain concerns me. But I don't think we can definitively answer this question at this time. I also think it is inappropriate to pinpoint a particular age for concern. An experience can feel more real in 3-D than 2-D, but the breadth and depth of the impact depends upon many variables. On one hand, virtual reality is not a whole lot different from what kids are already experiencing: They're already on social media, they're already online playing games, they're already talking to avatars on the screen. On the other hand, VR is highly immersive. But kids who have played videogames are adept at discerning reality from cyberreality.

• DR. AHN: Studies demonstrate that younger kids generally start being able to tell fantasy from reality around the age of 4, and then fully develop the skills to tell programming content from advertising content around age 7. At this young age, I wouldn't let kids play in VR on their own. You have superpowers in virtual worlds, like flying, driving fast cars and stopping time, and very young kids may struggle to differentiate VR from reality.

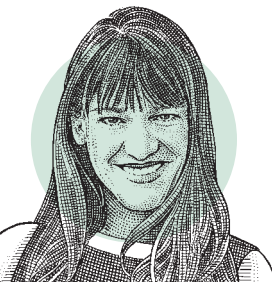
For the older kids, say above



• Sun Joo (Grace) Ahn



• Rachel Kowert



• Jessica Stone

the age of 8, VR use starts making a lot more sense. At this point, however, their social and relationship-building skills are still very much underdeveloped. For example, their understanding of how friendships are formed and maintained are going to be upended by how avatars can suddenly appear and disappear in VR worlds. Parents need to have conversations about how to deal with avatars. However, once these conversations have been had and children understand that the rules may be different from the physical world, I wouldn't be too concerned with older kids.

What does concern me most is that kids really struggle with this sense of not knowing who's behind an avatar, especially before the age of 7. Anonymity is a hard concept to grasp. Learning this takes a lot of trial and error, and parents should monitor their kids' games on their phones or computers so that they know what's going on.

• WSJ: Is a child's developing concept of reality harmed by spending a lot of time in a virtual world?

• DR. STONE: The answer is, ultimately: It depends. One might see a person playing games for hours. Another might see the person practicing social skills, exploring their identity, gaining a sense of mastery, frustration tolerance and critical thinking—and see great value in that.

A young person can go into a virtual world and try out different roles. And isn't that what adolescence is? Figuring out your self-identification, what you believe in, how you want to represent and present yourself, how people respond. What an amazing gift it is to be able to do that in an environment that doesn't have direct, immediate, real-world consequences!

• DR. AHN: On the flip side, say in adolescence, we need to be cautious of what we call "identity tourism," a term coined by Dr. Lisa Nakamura at the University of Michigan. So, say, I'm going to try out being a Black person, and I think, "Hey, that wasn't bad. I don't know what other people are talking about!" In these formative years of adolescence, I think we need to be very cautious of kids forming incorrect or inaccurate perceptions of taking on these different identities.

• DR. KOWERT: What concerns me, especially for kids, is that the virtual worlds that we have now just do not reflect the problems that we have in the real world. A lot of the conversations about the metaverse make it seem pretty utopic—which is so far from the truth.

• WSJ: Does VR becoming more lifelike make it more dangerous for developing minds?

• DR. KOWERT: If nothing changes from the way games have been developed, we're going to have the same problems: a lot of hate, a lot of harassment, a lot of negative interactions. But if we look at the other side, the metaverse is a place we occupy once the world is no longer habitable. Now think about the past two years.

Virtual spaces were the saving grace of Covid-19! Thank God we could connect with people in a playful, social, interactive space like in a game.

• DR. AHN: I had my kid in digital learning for 15 months, and without Roblox, I just don't think he would have had any sort of social interactions with peers.

• DR. KOWERT: We absolutely have to discuss the toxicity that will occur in these spaces with our kids. If you let your children in there untethered, without monitoring, without teaching them about digital citizenship, it's going to have a negative impact on their mental health.

• WSJ: How much of all this does fall on parents?

• DR. KOWERT: You have to teach your kids how to behave. If someone steals your shovel in the real world, you don't push them or hit them or say mean things to them. The virtual world is not that different. We have to be unafraid to have the conversation about what goes on in there and how to navigate it. Play with them so you can show them that they can always block someone, or just take the headset off. Ask them how their day in RuneScape went.

• DR. STONE: Companies that are creating these worlds should have monitors in those spaces, especially if we're talking about kids. But it comes back to digital citizenship. I had a really proud mom moment recently. I was sitting in my office and my son was behind me playing Gorilla Tag, and some people in the game were saying some negative things about homosexuality. And my son, who was 12, said, "That's not OK. Don't do that. I don't want to hear it." And the person wouldn't stop, so he blocked him. Being involved, co-playing with your child in the VR world, increasing your media literacy, having discussions about digital citizenship—that's all so important to do as a parent.

Ms. Mitchell is a writer in Chicago. She can be reached at reports@wsj.com.



The game Gorilla Tag is far from lifelike, but there is plenty of interaction among players.

JOURNAL REPORT | TECHNOLOGY

As parents, lawmakers and activists push for stronger rules to keep children off websites meant for adults, the question of how to verify age online has taken on new urgency. More sites are asking users to certify they are over 18, and companies are rolling out innovations aimed at better age checks.

The trouble is that most methods of verifying age create new problems of their own. Requiring material such as a user's credit card or driver's license to buy alcohol or view pornography, for instance, creates privacy issues and new opportunities for data leaks. They also make it hard for users to browse anonymously. What's more, enterprising children will be able to find ways to defeat all but the most intrusive verification processes.

Despite the hurdles, a number of countries are exploring stricter laws about age verification for sites that have adult content or sell products such as tobacco.

Last year, the U.K. began enforcing new standards for websites likely to be accessed by users under 18, including age verification. In Australia, online age verification is being tested for alcohol purchases, with the possibility of extending it to gambling and adult sites. France threatened to block pornography sites unless the owners implemented more-thorough age verification in December. In the U.S., the information revealed by the Facebook Files investigation about the social-media giant's impact on young people has renewed interest in updating the Children's Online Privacy Protection Act, the primary American law for underage internet users.

'Verification theater'

There is no shortage of strategies for checking users' age. The most common option is to ask the user to check a box declaring they are 18 years of age or older, according to a survey of practices across the web by Karen Renaud and Chelsea Jarvie, researchers out of Strathclyde University in Glasgow.

"We call this verification theater, because it pretends to verify but it actually doesn't do a great job," Prof. Renaud says.

Increasingly, adult sites require users to upload a government ID such as a passport that can be checked against a database. Some companies put a small charge on the user's credit card to make sure it is legitimate, then reverse the fee. Others check a mobile phone's registration information, which contains the age of the user. At least one company says that it can confirm someone's age by analyzing their social media, and multiple companies check third-party database companies, which run ID checks at places like credit bureaus and ping government services.

All these methods have varying success, but none have mastered a combination of privacy, efficiency and affordability yet.

For users determined to flout rules, "there are going to be straightforward workarounds," says Jake Wiener, domestic surveillance law fellow at the Electronic Privacy Information Center, a nonprofit research group.

For instance, children could use a parent's cellphone or a prepaid credit card to sign up for a site, or an older sibling could help them. Also, giving out sensitive information to websites can create vulnerabilities for users. Credit-card information and other identity documents held by websites could be hacked or leaked.

At the same time, adults will have to jump through more hoops to do legal things online, like looking at pornography. And it puts groups with less access to identification or in more need of privacy—such as undocumented people, LGBT youth and sex workers—at higher risk. "History has shown that marginal communities will be impacted more severely by these laws," says Daly Barnett, staff technologist at the Electronic Frontier Foundation, a nonprofit online-rights organization.



A number of countries are exploring stricter laws about age verification for sites that have adult content or sell products such as tobacco.

The Problem With Online Age Verification

The more rigorous the solution, the more privacy issues it creates. But AI may offer an answer.

By JACKIE SNOW

Protecting anonymity

One possible solution is to create age tokens, such as a QR code, that users can provide to merchants' sites without giving out additional information.

The National Association of Convenience Stores created TruAge, a free open-source platform that lets a buyer scan a driver's license. The license is verified with databases, after which TruAge generates a single-use QR code that can confirm the buyer's age for merchants. TruAge is currently pilot testing only for in-person transactions, but Doug Kan-

tor, the general counsel for the convenience-stores association, says the group plans to extend the program for digital purchases.

The association says TruAge records the ID number, document number, date of birth and document expiration date, and stores the data for as long as the QR code is actively being used, but without the person's name. Mr. Kantor says the recorded data isn't capable of identifying the individual.

Some of the biggest online companies are turning to artificial intelligence to estimate age with-

out requiring additional data. Last year, Meta Platforms Inc. outlined its use of AI to continually cross-check accounts on its Facebook and Instagram sites for information that can belie or confirm a user's stated age. For instance, if someone lists their age as 18 but has a friend sending them a "Happy Quinceañera"—15th birthday—message, that could be a red flag.

YouTube is using machine learning to automatically block younger viewers from certain videos. If a video has been determined by the machine-learning

tool or a human censor to be for viewers over 18, YouTube will ask a user to sign in to their Google account. A Google spokesperson directed us to a help page that says users can manage their own account only if they "meet the minimum age requirement for the country associated with your account." If the company suspects that a user is underage, according to the page, they must verify their age with a government-issued ID or, in some places, they may use a credit card.

For a limited time

Some companies are offering AI verification as a service—a potential solution for small companies that don't have the technical and financial capabilities to implement their own systems.

Yoti, a London-based digital-identity and biometrics company, says it trained its AI by showing it hundreds of thousands of photos of different faces, each labeled with information about the person's age and gender. After learning from these examples, the neural network that powers the software is able to look at photos of new faces that don't have age information and come up with a guess of its own.

For teenagers, Yoti says its estimates are within an average of 1.55 years of the correct age, with 6- to 12-year-olds getting within an average of 1.28 years. Yoti says its age estimation can't identify the person, and for privacy reasons, the company doesn't store the faces after the check. Yoti says it has 40 organizations using or testing its age services, with each check currently costing around 25 pence (34 cents).

VerifyMyAge is another company that offers AI-powered age estimation. The U.K.-based company, which eBay uses for sales of age-restricted tobacco items in some European countries, conducts checks with five different age-estimation software tools developed by other companies. VerifyMyAge then runs proprietary software that compares all the results to settle on an age. Andy Lulham, the company's chief operating officer, says the company is testing other AI-based age estimations like voice analysis and natural-language processing of public social-media postings.

Sites that use facial analysis to estimate age seem to be the best at balancing privacy, efficiency and affordability, according to the Strathclyde research. To be sure, there are technology hiccups: Prof. Renaud, the researcher, says she fooled one of the systems by having someone hold a dog in front of their face; the system processed the image as human. Still, she says, the systems will likely only get better with more data and improving technology. (She alerted the company whose system goofed, and it fixed the issue.)

AI Asks to Card You

Being able to watch all kinds of content online is concerning for parents with young children. It concerns online businesses as well that show adult content. Machine learning used in artificial intelligence is being utilized to help distinguish viewers' ages to make sure the content they're seeing is age appropriate. This is called age gating. Here is z

Multiple images of people



1 The AI is shown possibly millions of images of people from all age groups.

2 Using computer vision techniques, each image is broken down to pixels. Each pixel is assigned a number that coincides with the tonal degree of the pixel. Each photo is tagged with age, gender and skin tone.



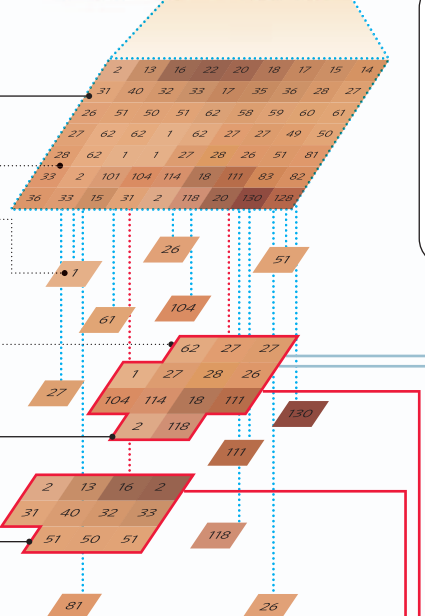
Age group identifiers or "tags" are assigned to each image.

3 Machine learning sees these numbers and begins to recognize certain groups as numeric patterns. It does not recognize people. It only recognizes numbers. For example, in this instance, numeric smile patterns are recognized.

Reduced to pixels

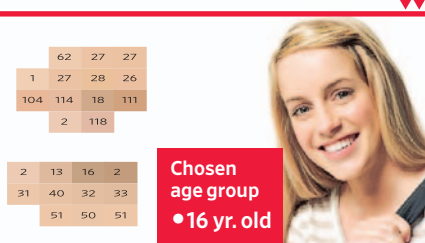
Pixels assigned numbers that can be understood by the AI

Pixel patterns



4 As the AI begins to recognize patterns in the numbers it can then associate these patterns with different age groups.

5 A constellation of the patterns associated with specific age groups can then be recognized by the AI. While being used, the AI can keep learning and tweaking its algorithm to continue improving its judgment.



Note: This is an outline of a "mock" AI system's flow loosely following age estimation systems on the market today like Yoti Source: BeinTouch; Yoti; Consultation with Kazunori Okada Ph.D., San Francisco State University Department of Computer Science; iStock

Ms. Snow is a writer in Los Angeles. Email reports@wsj.com.

JOURNAL REPORT | TECHNOLOGY

What to Do With Tech Companies

Continued from page R1

Some argue that the whole effort is misguided. The big tech companies have said that they support updated regulation but that some current regulation proposals could raise prices for consumers and hurt American companies' competitiveness and ability to innovate.

The Wall Street Journal recently brought together three experts to discuss some of the issues animating the global debate over how to rethink tech regulation.

Rob Atkinson is president of the Information Technology and Innovation Foundation, a nonprofit public-policy think tank whose mission is promoting tech innovation, with several tech companies on its board.

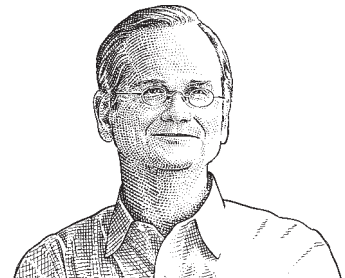
Barry Lynn is an author and executive director of the Open Markets Institute, a nonprofit research group with a focus on addressing monopoly behavior and the social, political and economic effects of concentration of power.

Lawrence Lessig, the Roy L. Furman Professor of Law and Leadership at Harvard Law School, is currently focused on addressing what he views as the harmful effects of ad-driven business models on public discourse.

Here are edited excerpts of the conversation.



● Rob Atkinson



● Lawrence Lessig



● Barry Lynn



as great a degree as possible. What we have on the internet is a couple or three corporations have monopolized vast amounts of the internet and of the services that used to be widely distributed.

When we look at Google, we should understand that inside of Google, Google's not really an innovator. Google is a monopolizer of other people's innovations.

We should think of a vastly more open, superior system, a system that is made that is like the way America used to be, in which everybody was free to come to the market with their best ideas, and move to achieve that vision by delimiting the power of the platforms that now dominate.

You identify the goal, and then when you find that in American law, in American policy, you have pathways to get there. There is no one pathway.

[Alphabet Inc.'s Google points to public statements it has made about innovation, including that the vast majority of its acquisitions have helped smaller technology companies grow and reach consumers faster, that its own R&D, including more than 6,000 research papers published in areas such as machine learning and robotics, is significant, and that American innovation and investment in internet businesses are robust.]

● **MR. ATKINSON:** The goal should be continued U.S. innovation and global competitiveness, and we're at risk of losing that to China. Barry mentioned, "These companies don't innovate." According to the EU R&D 5000 study that just came out, out of the top 10 companies in the world doing R&D, five of them are American: Facebook, Amazon, Google, Microsoft and Apple. Those five companies spend more on R&D than all of the U.K. economy does on R&D. They're equivalent to a third of what China's doing in R&D, so those companies are critical to the U.S. continuing to innovate.

I don't think we should do very much of anything. The tech economy is working pretty darn good.

But we need a national privacy law. We need much more enforcement, both domestically and internationally, on cyber.

The worst thing we could do is pass these antitrust laws in Congress. I think it would slow down innovation and it would make consumers' lives worse.

The top issues

● **WSJ:** What are the biggest problems regulators should pay attention to when it comes to the big technology companies?

● **MR. LESSIG:** The business model of big tech is contrary to the business model of democracy. The business model of big tech is grounded in advertising, which means grounded in driving engagements. It turns out to be most profitable when it drives us down rabbit holes of content to keep us locked into their platform.

● **MR. ATKINSON:** If we're going to have regulation, which we do need in the digital economy, it should be about issues like privacy. It shouldn't be focused on big tech. Why would small tech get away with violating my privacy, or nontech? Why would we have a regulation around cybersecurity or malware only focused on big tech? Why would we have a rule around AI that only affects big tech?

If there's a case against any of these companies where they are violating current antitrust law and engaging in anticompetitive behavior, the Justice Department

or Federal Trade Commission should bring a suit. That's about all we need to do.

● **MR. LYNN:** If people have come to accept a certain platform as essential to their lives, then the conduct needs to be regulated to ensure that the platform treats everybody the same, provides them the same services at the same terms.

We don't want the intermediary to be picking and choosing winners and losers. We don't want the intermediary to be manipulating how people act. We want the intermediary to be providing services to everybody in the same way.

● **MR. ATKINSON:** You want breakup as a structural remedy for large technology firms. Am I correct?

● **MR. LYNN:** It depends on the firm. Would we want to break up Amazon? Maybe we would separate out the platform from the ability to manufacture, say, Amazon-branded batteries, because that's a traditional approach to

ensure nondiscrimination. Someone who controls a platform is not allowed to compete with people who depend on that platform.

[Amazon says that selling its own branded products alongside other sellers' products is a boon for customers and sellers, adding that solutions that separate the two would make it harder for customers to find what they're looking for and harder for sellers to connect with customers, as well as removing the in-store competition that helps keep prices low. It also says that separating its logistics from its store would inhibit its ability to offer fast, free shipping.]

● **MR. ATKINSON:** What's lost in this discussion is consumer welfare. That's really what we ought to be focusing on here. If Google discriminates on organic search against Yelp, that to me is an actionable antitrust case. No evidence that they've done that.

On this whole notion of self-preferencing, I went to CVS the other day, and I got their CVS baby aspirin, because it was cheaper. I'm super happy that Amazon has Amazon batteries.

● **MR. LESSIG:** When Rob talks about these tech companies as if it's just your local grocery store preferencing their local items, it portrays a fundamental misunderstanding.

The AI behind this technology is facilitating a kind of price-discrimination regime on both sides of the transaction that we have never seen in the economy. And that's because of the enormous capacity for data about the user that the platform has.

The platform is between both the seller and the buyer and is able to leverage that knowledge in a way that produces a kind of market that we've not seen before.

The rules we need

● **WSJ:** What regulation—if any—is necessary to better govern the behaviors that we're talking about?

● **MR. LYNN:** Three years before



Scan this code for a video on why some see Web 3.0 as the future of the internet.

the Sherman Antitrust Act, the Interstate Commerce Act basically said to the railroads, thou shall not discriminate in terms and in service and pricing and thou shall post all your prices, so we can make sure that we understand if we're getting cheated.

You start off with nondiscrimination as your baseline to establish a rule of law, because if you allow for a powerful actor to discriminate, then your property is not protected, your liberty is not protected. You have no rule of law.

● **MR. LESSIG:** We also have to recognize something which we've never had to address, which is the difference between different domains of activity on the internet. There's a certain domain within which I think advertising is doing great. The idea that platforms don't advertise mountain-

The big tech companies have said that they support updated regulation.

climbing equipment to me is a great thing. I'm happy for that.

Where the business model drives people into increasingly polarized environments, that use of advertising or data is destructive. We don't yet have, in the stuff that's being discussed in Washington, a way to think about the places we could be helping, and distinguishing that from the places we might not need to do much at all.

● **MR. ATKINSON:** What too many of the antitrust populists are forgetting is that the goal of antitrust for so long has been the consumer-welfare standard. As a consumer, I am super happy with that because nobody's forcing me to go to Amazon or buy from Walmart.

I haven't heard anybody comment that TikTok now has more viewers than Facebook. How did that happen? I thought Facebook was a monopoly. TikTok's not a social-media market. It's the market for eyeballs. And that market is incredibly competitive.

I think with the current antitrust system we have, it has all of the tools to do exactly what it needs to do.

The solutions

● **WSJ:** I'd like to drill down on your best ideas for tech governance.

● **MR. LYNN:** Our goal should be to empower citizens to do for themselves and to do for each other to

● **MR. LYNN:** On the issue of freedom of expression, we do agree that this is too much to put on these corporations. It is a responsibility of citizens to work on this together.

● **MR. LESSIG:** I would focus on poisonous business models. The one I'm focused on now is the business model that profits from dividing us. Not because they want to destroy America, not because they want to support one side or the other, but just because the algorithm turns out to be most profitable. That is driven by the need for engagement, which is driven by the underlying advertising model.

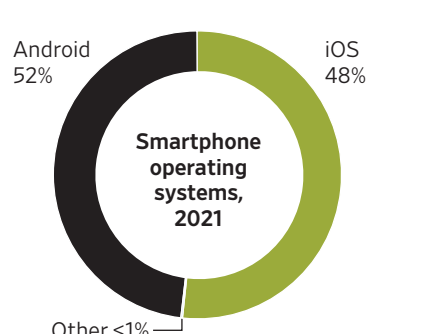
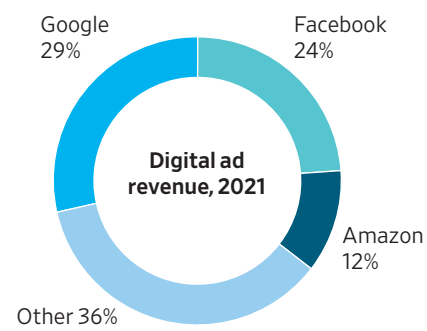
If you think about the contrast between the Twitter or the Facebook way of engaging on politics, or the podcast or long-form way of engaging on politics, the latter is healthier, and we ought to be setting up incentives to drive towards healthier discussions.

[Facebook, which is owned by Meta Platforms Inc., has previously said, "The best way to tackle the challenges facing today's internet is by passing new regulations addressing the areas of greatest concern to people, like content moderation, election integrity and privacy—as we have been urging Congress to do for years."]

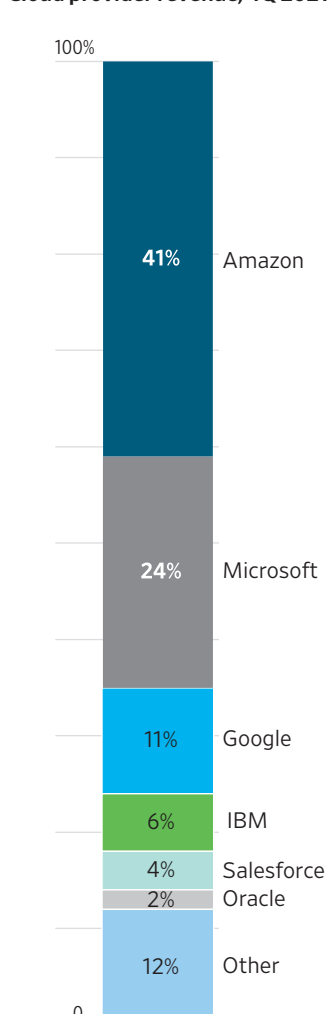
Mr. Rosenbush is chief of the WSJ Pro Enterprise Technology Bureau. He can be reached at steven.rosenbush@wsj.com.

Digital Dominance

Shares of several digital markets in the U.S.



Cloud provider revenue, 4Q 2021



Note: Totals may not equal 100 due to rounding. Sources: Insider Intelligence (revenue, e-commerce, operating systems); Synergy Research Group (cloud)

Senior Communities Add Tech Assistance as One of Their Perks

Residents need help downloading apps, dialing into Zoom calls, making doctors' appointments and more

By SUZANNE OLIVER

Frank Diaz offers weekly classes on topics like downloading apps and using QR codes. He also meets one-on-one with people, helping them to manage passwords or buy the right tablets.

His pupils: the residents of a senior-living community in California where he is tech concierge.

Increasingly, some tech savvy is required for the activities of daily living—such as connecting with friends via Zoom, shopping online, using smart TVs and setting up doctors' appointments. As a result, more independent and assisted-living communities are adding personal tech support to their list of amenities. Full-time tech concierges on the premises at high-end communities such as Atria Newport Beach in California, Inspir Carnegie Hill in New York City and the Watermark at Napa Valley in California, where Mr. Diaz works, help residents, at no additional charge, with their everyday tech needs.

The need for personalized tech support in senior-living communities has been increasing as residents acquire ever-growing numbers of personal digital devices. In a 2021 survey, Link-age Connect, a provider of consumer research for the aging-adult marketplace, found that 83% of adults 55 and over own a smartphone, 66% own laptops and 58% own tablets.

"Couples are moving into retirement communities with five to seven devices," says Majd Alwan, senior vice president of technology



Tech concierge Frank Diaz conducting a class.

and business strategy at LeadingAge, an association of nonprofit providers of aging services, and executive director of the group's Center for Aging Services Technologies.

But older adults often aren't as facile with the devices as younger generations are. According to a 2021 survey conducted by the Pew Research Center, more than half of Americans over age 65 and two-thirds of adults over age 75 have little confidence in their ability to set up and use their digital devices.

That was a particular problem when, during the pandemic lockdowns, those devices became residents' lifelines to the outside world. The staff in senior communities could hardly keep up with requests for assistance with smartphones, tablets, Zoom, FaceTime and telehealth visits. Community volunteers who had helped in the past were no longer allowed to enter the buildings due to visiting restrictions. As a result, all staff members, including maintenance workers and drivers who

knew how to use a cellphone, were conscripted to help residents get online.

That experience, on top of the rising use of smart devices in general by residents of high-end retirement homes, has led senior-community operators to formalize

Digital devices help seniors maintain social ties.

and expand their tech-support programs.

"Many senior communities have on-site computer classes," says Tom Kamber, executive director of the nonprofit Older Adults Technology Services and Senior Planet from AARP. "The tech concierge is new. I think it is a great idea."

In addition to leading classes for residents at the Watermark once a week, Mr. Diaz schedules one-on-one visits. He says most of the requests he receives are for

help with password management, application downloads, setting up accounts with services including Zoom, Uber and Instacart, and logging into streaming services such as Netflix. Recently Mr. Diaz helped two residents set up receivers to connect their hearing aids to their televisions and helped another purchase an iPad and set up a digital newspaper subscription that enabled him to get his news earlier in the morning, and in larger type.

While full-time tech concierge service without fees is rare, most senior-living communities offer some form of fee-based tech training and support, says LeadingAge's Mr. Alwan. While industry-wide pricing data isn't available, Mr. Alwan says typical fees charged by LeadingAge members that provide senior housing are \$12.50 to \$25 for 15-minute sessions. In many communities, if there is no full-time person, frequently an IT employee or other staff member will step in to troubleshoot residents' problems. Quick fixes of this sort are often free. In some communi-

ties, local volunteers and other residents also offer tech support at no charge.

Some senior communities outsource tech support. In California, residents of the upscale Vi at La Jolla Village in San Diego and Vi at Palo Alto, part of Chicago-based Vi, a developer and operator of senior-living communities, get virtual assistance through Candoo Tech, whose concierges are trained to work with older adults. According to Mellany Hanson, lifestyle director at Vi at La Jolla Village, Vi pays half of an undisclosed annual fee for residents, for which they get two 90-minute, one-on-one learning sessions, unlimited 30-minute help sessions, and one group class a month. Additional computer sessions or longer help sessions are available for an additional discounted price.

Help with Zoom is a frequent request for tech concierges in Vi communities. Last year, Ms. Hanson says, a concierge at La Jolla Village helped a 90-year-old resident set up a Zoom account so she could continue to attend meetings of a charitable organization for former flight attendants.

Maintaining social ties is the No. 1 reason seniors are buying and using more digital devices, says LeadingAge's Mr. Alwan. A study published in the Journals of Gerontology found that internet use among retired older adults reduced the probability of depression by 33%.

The increasing use of technology in senior living—for instance, to control lighting, shades, temperature and smart TVs—is becoming an invaluable part of the experience. Such tech provides greater independence, social engagement, health, safety and quality of life for residents, says Brian Geysler, vice president of clinical innovation and population health at Maplewood Senior Living, owners of Inspir Carnegie Hill. Training, teaching classes and trouble-shooting residents' devices, Mr. Geysler says, keeps the tech concierge "very, very busy."

Ms. Oliver is a writer in New York City. Email reports@wsj.com.

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JOURNAL REPORT | TECHNOLOGY

YES

Economic and National Security Demand It

The funding authorized by the CHIPS for America Act, if carefully targeted, could have multiple powerful effects: It could level the playing field with East Asia in semiconductor manufacturing, supercharge the entire U.S. semiconductor industry and greatly increase U.S. resilience to potential disruptions in what is arguably the world's most important supply chain.

As the current global semiconductor shortage has revealed, vast swaths of the global economy depend on consistent access to a wide variety of semiconductors.

Unfortunately, while the U.S. is dominant in many parts of the semiconductor supply chain, such as chip-manufacturing equipment and chip design, East Asia has become the center of chip manufacturing itself.

Both leading-edge microprocessors and dynamic random-access memory, or DRAM, chips face severe risks of supply disruptions over the next decade. These devices power everything from cars and laptops to supercomputers and weapons systems. And most of them are made in East Asian countries subject to significant geopolitical risks.

Consider: If China were to invade Taiwan, the U.S. and the world could lose access to 85% of all leading-edge microprocessors, almost two-thirds of more-mature microprocessors, and half of all DRAM chips. The economic and security implications are difficult to fathom. The U.S. would simultaneously face a major foreign-policy crisis, shortages in the chips that power intelligence and military applications as well as critical infrastructure, and a global and domestic economic crisis

'Subsidies are necessary to level the playing field with South Korea and Taiwan.'

far more severe than the turmoil resulting from the current semiconductor shortage.

Skeptics of government incentives argue that, despite these risks, the U.S. should not be in the business of offering government subsidies, which are often ineffective or even counterproductive. But in this case, carefully targeted subsidies can be profoundly beneficial to U.S. national and economic security, for two key reasons.

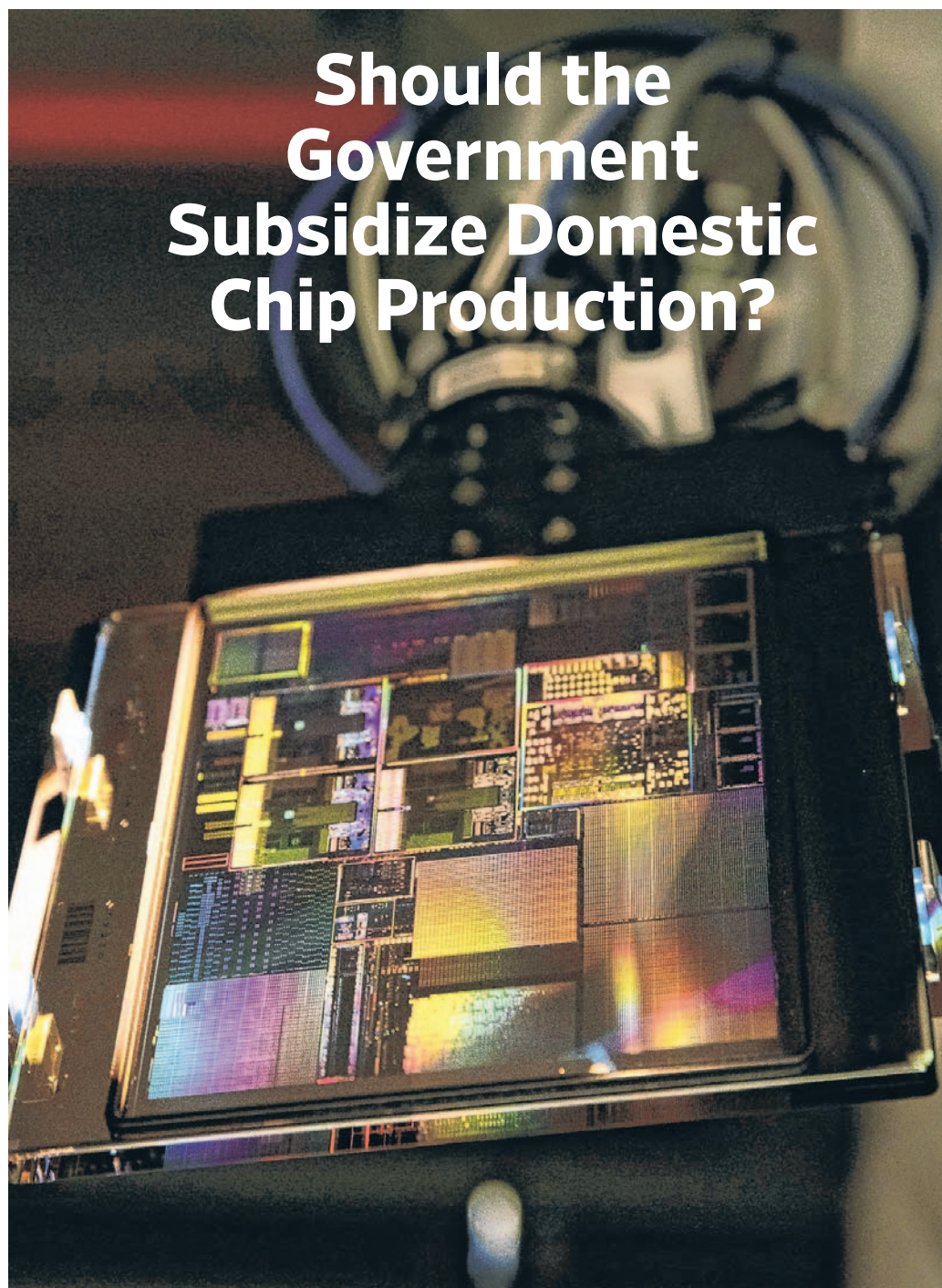
First, subsidies are necessary to level the playing field with South Korea and Taiwan, where decades of government support have resulted in lower operating costs. This cost differential makes it hard for the U.S. to attract and retain chip makers, despite natural advantages such as ample land, a talented workforce and strong intellectual-property protection. For contract chip makers like Taiwan's TSMC, locating in the U.S. also affords greater proximity to their biggest customers—firms like Apple and Nvidia, which hire chip makers to manufacture their chip designs—as well as reduced exposure to risks of geopolitical crises in East Asia. By offsetting the costs of building in the U.S., subsidies can align chip makers' private incentives with the imperatives of U.S. national security.

Second, investments today could have long-term impacts. Semiconductor talent in development, design and production tends to cluster into self-perpetuating hubs. Establishing leading-edge semiconductor manufacturing plants in the U.S. is the single best way to ensure that these hubs are started, and remain, in the U.S.—benefiting U.S. competitiveness across the semiconductor supply chain.

Some opponents of subsidies also point to the expansion of chip making in the U.S. in recent years, arguing that such expansion shows that subsidies aren't needed.

But, with the exception of a handful of low-volume R&D facilities, none of the manufacturing plants currently under construction in the U.S. will be capable of producing leading-edge microprocessors or DRAM chips upon their completion. Without incentives, the U.S. will continue to depend on East Asia for these chips.

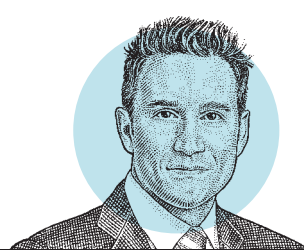
Should the Government Subsidize Domestic Chip Production?



Part of the chip-making process at a GlobalFoundries plant in New York state



BY WILL HUNT



BY SCOTT LINCICOME

The U.S. share of global semiconductor-manufacturing capacity has declined sharply over the past three decades, fueling concerns about American reliance on imports for chips that are crucial to the economy and national security. • In an effort to reverse that decline, Congress passed the CHIPS for America Act last year and the legislation was signed into law. It's designed to provide government subsidies to encourage chip production in the U.S., as well as support for semiconductor research and development. But it was only earlier this month that the House of Representatives approved \$52 billion of funding for the CHIPS act, matching the amount approved by the Senate last June. Now the separate legislation containing the House and Senate funding will have to go through a negotiation process to produce a single bill that will need new approval from both houses of Congress. • While that process plays out, the question remains: Should the government subsidize chip production in the U.S.? Some see an urgent need for government help to address a deficiency with far-reaching potential consequences. Others say the government should stay out of the semiconductor business and let market forces resolve the global imbalance in chip production.

Other objections to subsidies include the possibility that they will trigger trade frictions, but the importance of domestic chip-making capacity to U.S. economic and national security outweighs that risk. The prospect of a possible glut of chips also should be no impediment to subsidies. Chip makers will decide how much capacity to build and what kind of chips to make without regard to subsidies. The subsidies will simply encourage them to base a greater share of their production in the U.S.

The window of opportunity to shift the center of gravity of global chip-making capacity back to the U.S. is rapidly closing, as the cost of building advanced semiconductor manufacturing facilities is rising exponentially.

By 2030, a single plant may cost more than \$50 billion. In the absence of CHIPS Act incentives, the U.S. may find itself in 2030 in a similar position to China today: spending tens of billions of dollars a year in a likely doomed effort to remain competitive in the most strategically important industry in the world.

Action is urgently needed. Congress should fully fund the CHIPS for America Act incentives.

Mr. Hunt is a research analyst leading semiconductor-policy research at Georgetown University's Center for Security and Emerging Technology. He can be reached at reports@wsj.com.

NO

The U.S. Industry Is Doing Just Fine

Broad, strings-free subsidization of U.S. semiconductor manufacturing is costly, unnecessary and perhaps even harmful to the industry itself.

First, the U.S. semiconductor industry is healthy and expanding. While the U.S. share of global chip production has fallen since the 1990s, the industry's research-and-development spending, capital expenditures and inflation-adjusted output—in terms of value and wafer capacity—have increased substantially over the same period. American semiconductor firms also still produce 44% of their wafer supply domestically and lead the world in chip design and innovation.

The most advanced chips are today imported from East Asia, but U.S. powerhouse Intel and other semiconductor manufacturers—enjoying astronomical profits due to intense global demand—are planning future investments in production of advanced and legacy chips in the U.S., with or without subsidies. They have gone on a spending spree in the U.S. and other locations out-

side of China or Taiwan.

TSMC's Arizona facility will open in 2024, and it will be the most advanced in the country. Samsung is expanding in Texas, as is Intel in Arizona, Oregon and Ohio. Around \$80 billion of private investment in American chip manufacturing is forecast through 2024, and experts agree it will happen regardless of federal support, because chip makers covet the U.S. workforce and proximity to specialized equipment manufacturers. These are simply not companies that need taxpayer help or the government's encouragement to produce far more in the U.S.

Second, China-related foreign-policy concerns are overblown. Multinational sourcing decisions always consider geopolitical risks, and this is certainly the case for semiconductors. Many large chip-consuming companies are already adjusting their supply chains to account for geopolitical tensions. Semiconductor manufacturers are doing the same: Expansion plans of Samsung, Intel, TSMC, GlobalFoundries and others are all motivated, at least in part, by geopolitics. If giant multinationals deem Taiwan or even Asia to be too risky and want chip production elsewhere, they can pay for it—and that's exactly what they're doing.

Besides, the federal subsidies under consideration are in no way sufficient to replace supplies from Taiwan if a Chinese invasion removed those chips from the global market, nor would they act quickly to have any effect. Any new subsidized U.S. production would at best be online in 2025 and more likely in 2026-27. Fortunately, the worst-case scenario of a Chinese invasion is a remote risk.

Subsidies, on the other hand, present far likelier risks—as China itself shows. Its industry remains years behind top chip makers and riddled with problems despite the Chinese government spending decades and billions of dollars to achieve national semiconductor greatness. U.S. subsidies, rather than producing an efficient, competitive domestic industry, could instead make it bloated, dependent on federal assistance and globally uncompetitive. They could also contribute to a

'These are simply not companies that need taxpayer help or the government's encouragement.'

global semiconductor glut and create new and costly trade conflicts.

Chip making is notoriously cyclical, with a history of strong capital spending followed by overcapacity, price crashes and struggling firms. Current investment is, by some accounts, already at levels that typically lead to oversupply, and previous demand forecasts may have been too optimistic. Many analysts are worried about a global glut in 2023 that would put U.S. and foreign chip companies in financial distress. U.S. subsidies would exacerbate these unstable market dynamics.

Subsidies would also foment trade disputes as nations move to protect struggling domestic chip makers from subsidized import competition—precisely what happened decades ago when U.S. tariffs targeted Japanese and Korean memory chips, harming American computer companies and consumers in the process.

Other common justifications for subsidies also fall flat. They won't alleviate the current chip shortage, which should end long before subsidized U.S. production arrives. Furthermore, the proposed funds aren't limited to supporting the most advanced semiconductors or national-security-related ones, undermining arguments that these subsidies are needed because free markets can't fully address risky R&D or national-security concerns. Indeed, the House and Senate bills earmark billions for older commercial chips because auto makers use them. Subsidies for today's leading technologies might not solve tomorrow's problems, either, as shifting and resources are already shifting from even the most advanced current technologies to different models like quantum and neuromorphic computing.

Ultimately, the economic and national-security justifications for throwing taxpayer billions at domestic chip makers are weak. Self-interested semiconductor firms may claim that their situation is dire and that only subsidies can save them and the country. But Congress shouldn't play along.

Mr. Lincicome is the director of general economics and trade at the Cato Institute. He can be reached at reports@wsj.com.